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SEPTEMBER 1994

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VOL. 20, NO. 9 (ISSUE #221) SEPTEMBER 1994

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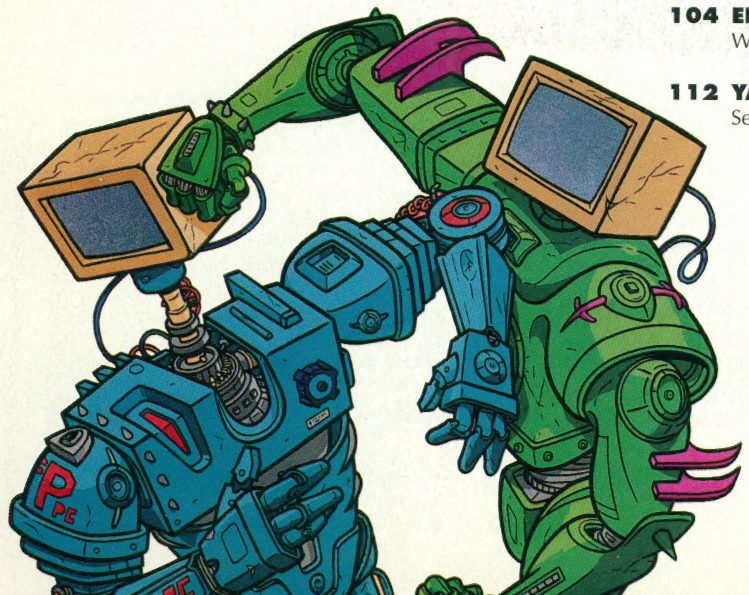

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FROM THE EDITOR

DOMINIC MILANO

NO EXCUSES, I SHOULDA HAD A V-8

Uncommonly slow. Brain-dead. Clueless. Whatever. I make no excuses. It wasn't an especially good month for the gray matter that sometimes pretends it's my brain. So I forgot. In fact, it never crossed my mind. We were in the throes of organizing one of the more complicated issues of the year — last month's roundup of all the samplers on the market, which came on the heels of July's special issue on multimedia, no less. It was one of those moments when a most-desired thing slithers into a black hole of memory and lies waiting for just the right inopportune time to pounce.

So here I am, smacking myself in the head like I shoulda had a V-8, 'cause I shoulda told you last month that our Reader Soundpage Competition is back!

Mayhap I should explain. Once upon a time, actually I think it was around mid-summer 1980, our then-publisher Jim Crockett had the brilliant idea that it would really be cool if we could do something to let our readers hear some of the music that we were writing about. We looked into all kinds of wild schemes to make that possible. One of the more odd items was an optical scanning technology that would read music that was printed in bar-code form on the edges of our pages and allow it to be played back on personal computers such as the Apple II and Commodore-64.

Similar systems were being used by some computer mags to deliver lines of programming code to their readers. The only hitch was the optical scanner would cost readers a few hundred bucks. Not good.

One alternative, the one we went with, was to bind a flexidisc recording into our pages. About the size of an old 45 rpm single, only way thinner, these Soundpages, as we called them, held about four minutes worth of snap, crackle, pop, and music. Really cool music by the likes of Wendy Carlos, Jan Hammer, Chick Corea, a number of historical figures of early electronic music, and dozens more.

In the mid-1980s, we started a contest of sorts. We asked readers to send tapes in, we gave them a listen, then put the best one on a Soundpage and wrote a story about the winner. It was a truly great thing. As editorial research, it was unprecedented. We got to hear where you guys were at musically, technologically, creatively. As a forum to give something back to our readers . . . well, one and sometimes two lucky players got their 15 minutes of fame. At least one — Guy Babylon — parlayed into more than that by landing a gig touring with Elton John after winning our competition.

The Soundpage Competition became something of an institution. Every year, tapes flowed into our offices in anticipation of the coming competition, which we continued even after discontinuing Soundpages on a monthly basis. But even fun things come to an end. With the ascendance of the compact disc and the demise of the turntable, flexible records, even records of the best of our readers' music, had come to their end.

Sure, we had bright ideas about alternatives. Bound-in, glued-on CDs were a thought. But compared to the flexidiscs, which weren't cheap by any stretch of the imagination, CDs were a veritable nightmare of expense. I mean, it costs a small fortune to print *Keyboard*. Adding a CD to it would have more than doubled that cost.

So what to do? We've been pondering that question for the last couple of years. And with our upcoming 20-year anniversary (holy moly, Batman, break out the gold watches and the pension plans, I'm feelin' like a fossil) we found the solution. We'd use our sister publication *Guitar Player*'s 25th anniversary celebration from '92 as a model.

Rather than pick one winner, there'd be a bunch of them. Twelve to be exact. Prizes — tons of gear — will be awarded to the winners. And the best overall winner will be flown to Southern California in January 1995 to perform at our 20th Anniversary extravaganza concert and attend the NAMM show to boot. (See page 120 for more information.)

What about letting other readers hear the winners? We're working on that. Stay tuned. In the meantime, get those sequencers and recorders fired up. It's reader tape listening time again at *Keyboard* Central.

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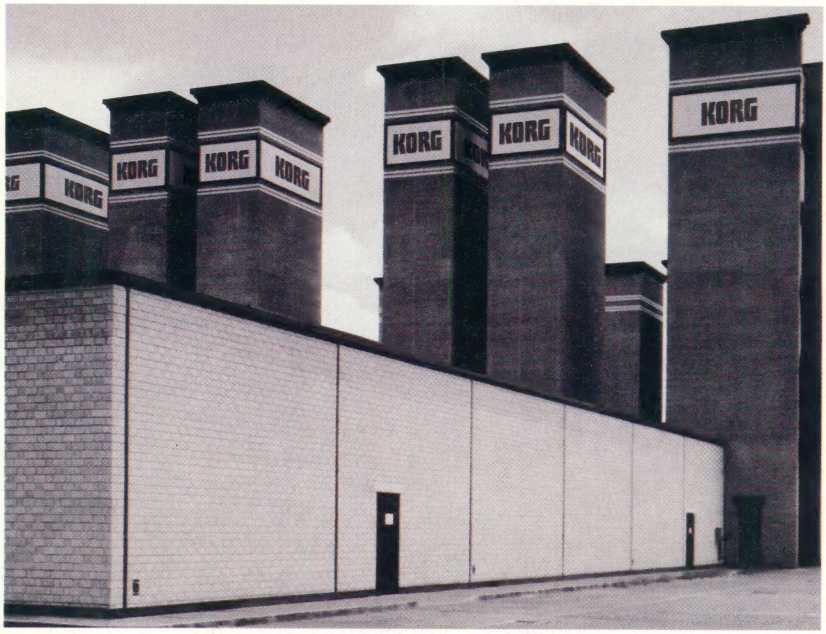
No one's actually been here. But everyone's heard the sounds coming out.

Here at the Korg® Power Plant, we don't see a lot of visitors. But musicians everywhere are familiar with the electricity we generate.



The Korg Power Plant, Long Island, NY.

For years, our keyboards and our sound modules have been putting power in the hands of people who know exactly how to use it: The power to bring an audience to their feet. Or drive them to delirium. Or, even better, to drive them to the nearest record store.

During the last New York blackout, the Korg Power Plant was testing its most advanced keyboard. Coincidence?

There are many technical reasons why the name Korg appears at almost every major concert, and in every major recording studio. But the best reason isn't technical at all: Korg has great sounds.

And that's due to the people who clock in at the Korg Power Plant every day. Real musicians. Players who agonize over our sounds for months before we ever let them out. (The sounds, that is.)

It's also due to the respect we have for your musical brain. The way we see it, when you're playing, our job is to simply get out of your way, so you can get the sound you want when you want it. That's the thinking that helped us create the 01/WFD Power Music Workstation.™ Which, having set all the standards for great sound and intuitive control, is probably the most heard and imitated keyboard in the musical world.

It also helped us develop the X3 Power Music Workstation, delivering the legendary 01/WFD-quality sound at an even more affordable price.

Of course, deep inside the Korg Power Plant, the work goes on, as we devote all our energy to finding tomorrow's hit sounds.

But since you're not about to visit, go hear for yourself at your authorized Korg dealer – it's the one source of power that's always nearby.

It's all about power: the 01/WFD Power Music Workstation.

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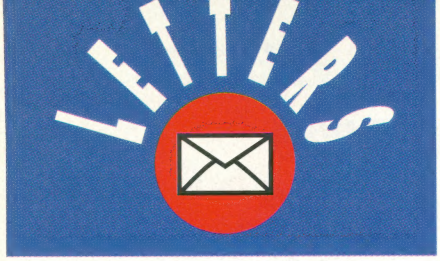

Progs Strike Back

[*Ever since our Apr. '94 cover story on Keith Emerson's arm surgery, readers have flooded us with letters expressing concern for his recovery. The following message, found in our fax machine just before deadline, shows that these sympathies haven't gone unnoticed.*]

I would like to sincerely thank all the readers of *Keyboard* for their letters of encouragement and support since the cover story regarding my operation. I was very moved and touched. Obviously, any operation needs time to mend, and I'm hanging in there despite the trauma of it all. Your support has strengthened me in my recuperation. Thank you again, so very much.

Keith Emerson

[*Even so, in our July '94 Letters column, Pablo La Rosa excused himself from the amen corner. "I make dance music . . . and I'm tired of reading stories on Keith Emerson, Chick Corea, and such," he wrote. "While they may be fine musicians, I can't relate to what they are doing. And, frankly, I don't care if Keith Emerson will ever play again." La Rosa concluded by pointing out "the cold truth" that his type of music, house and techno, "outsells any record Emerson is making." In their hearts, ELP heads know that La Rosa speaks the truth. The '90s are tighter and meaner than the '60s and '70s, when a sunnier climate was more hospitable to the grand gestures of prog rock. But that doesn't mean proggers like to have their noses rubbed in it. Maybe this is why the responses we've gotten to La Rosa's comments seem more defensive than interested in starting a dialog between hostile keyboard camps.*]

Dance/techno/house music sucks. It outsells other music only because the purchasers are musical idiots. *Keyboard* is a magazine for musicians. Dance music is for people who dance. People who write dance music are certainly not musicians. Only a stupid punk 21-year-old kid would not realize that it was Keith Emerson who popularized synthesizers in rock and roll. I cannot see how *Keyboard* could be writing features about dance or house artists five years from now. I can only hope that Pablo La Rosa's hands get caught in a lawn mower, and there's one less jerk making worthless "music." Maybe then he will appreciate Keith's dilemma.

Joe Adamiak
Newport Beach, CA

So Pablo La Rosa doesn't "care whether Keith Emerson will ever play again." I suppose we can attribute such a cruel and misanthropic comment as this to the lack of wisdom of a 21-year-old who seems just to be in it for the money. Of course, cash is important to any musician, but not to the exclusion of all else, and certainly not at the expense of someone better than twice La Rosa's age who is where La Rosa hopes to be someday. Such an unfortunate remark about someone else's well-being might lead others to doubt the depth and worth of his music. At any rate, it offends those of us who, while open-minded toward music of all stripes, have a bit more empathy toward the plight of someone who has moved us all.

Rick Mealey
West Haven, CT

[*This fissure between the pro- and anti-Emerson factions reflects an even broader division between players in the traditional sense and those who do their work mainly through sequencing. The line began blurring back in the '70s, though there was still plenty of crossover. Now, however, we're wondering if the keyboard community has permanently separated into hostile, or at least non-communicative factions. Check out the following letters, then let us know what you think: Is it impossible to keep one foot in each camp? Is there hope for constructive dialog here? And what does all this mean to you and your music?*]

I'm dismayed at the diminishing amount of editorial content in *Keyboard* related to actually playing musical instruments. In your June '94 issue, for example, the only articles that deal with making music by actually playing an instrument concern executing diminished scale patterns without any hint of how they might fit into any musical style, along with yet another Dave Stewart column that never seems to cover any music other than his own rarely available CDs.

As recently as 1992 and '93 you ran articles on Bruce Hornsby, Gregg Phillinganes, Billy Childs, and the Motown staff band — musicians who make music by playing keyboard instruments. If this doesn't stimulate ideas, go further back to when you published articles and columns by David Burge, Dick Hyman, Tom Coster, Andy LaVerne, William Fowler, George Duke, Richie Beirach, and T Lavitz. And while you're at it, leave the "insider" stories about Rick Wakeman's feuds with Yes and Keith Emerson's problems to *People*. Think information, not sensation.

Kerry McShane
Toronto, Ontario

I've used computers in recording, but I've sold them all. There's no more techno crap in my house; today it's quality instruments. While the techno whizzes spend their time sequencing and quantizing, I'm practicing. I've found that musicians make music. Techno is time-consuming, boring, and expensive, and it's quickly outdated. The real money still lies in talent. Besides, wouldn't you rather have a Steinway D than a bunch of stupid computers?

Dan Callahan
Springfield, MO

Amiga Amigos, not Adios!

Thank you for your recent coverage of Commodore's unfortunate demise (Aug. '94). Although we appreciate your including quotes from our company's chief technical officer, Todor C. Fay, in your coverage, we are concerned that your readers may be left with the mistaken impression that we are no longer developing for the Amiga.

Nothing could be further from the truth. In fact, if *Keyboard* had published its entire conversation with Mr. Fay, the article would

Send correspondence to: Letters, Keyboard, *411 Borel Ave., Suite 100, San Mateo, CA 94402.*

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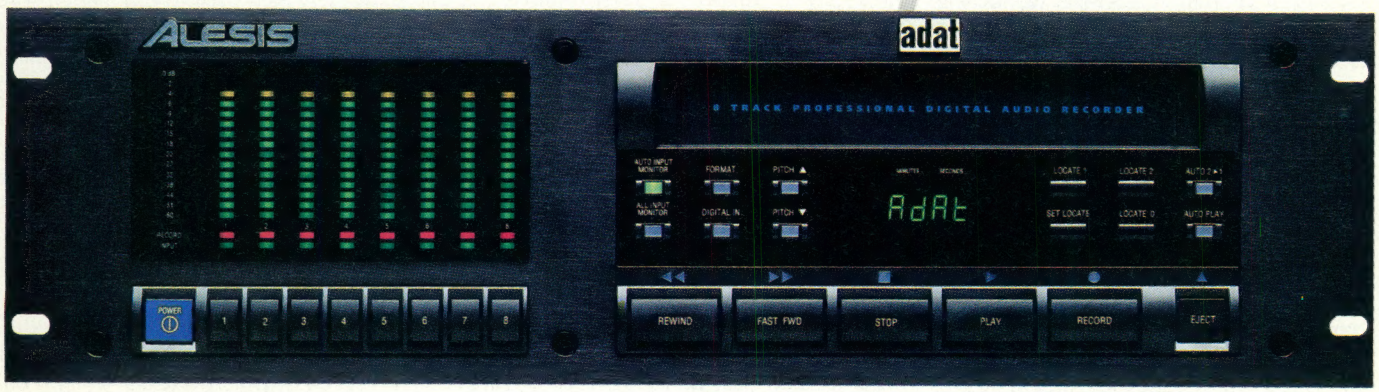

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have revealed a strong commitment on our part to continue not only to support, but to *develop*, for the Amiga platform. This commitment to Amiga development and Amiga customers is evidenced by our recent release of Bars & Pipes Professional Version 2.5 and the Amiga-adapted Yamaha CBX-T3, as well as our impending release of three new Styles collections for SuperJAM! Amiga and a new Tool collection for Bars & Pipes Professional Amiga, and support for two additional direct-to-disk recording systems for the Amiga. In addition, we recently published our biggest issue of *Quarter Notes* (our Amiga newsletter) yet!

The Blue Ribbon Soundworks has grown and prospered over the past five years because of a mutual commitment between us and our customers. We have absolutely no intention of sidestepping that commitment and will continue to provide technical support, product updates, and other new offerings to our Amiga customers for some time to come.

Melissa Jordan Grey
President
The Blue Ribbon Soundworks, Ltd.
Atlanta, GA

Armed With Multimedia

Please help settle a critical dispute. I say those are Dominic's arms on the July '94 cover. My staff thinks they belong to Jim. Which is it? (I also contend that you *can* get a tan like that by spending way too much time in front of a glowing computer monitor.)

Brian K. England
Regency Professional Pianists
Omaha, NE

Surviving Multimedia

It's amazing! I mail you a letter wondering whether you're going to investigate the changing world of multimedia music, then come home to find your July '94 issue, chock full of what I've been doing since the late '80s, in my mailbox. I've developed sounds, music, and software for most of the FM and DSP chips out there. And while I understand the Fat Man's "work hard and cheap" ethic, as we grow out of our infancy I've found you do work really hard but it's never cheap to stay on the cutting edge of this industry. Oh, and getting enough ROM space is another issue.

Michelle Simon
Oceanside, CA

Having produced music and digital audio for over 20 PC- and Mac-based multimedia titles, I agree with most of Ernie Rideout's article on finding work in this area, but I have to take exception to his recurrent implication that 16-bit audio, combined with the additional storage space provided by CD-ROM, is the saving grace for all self-respecting musicians.

First of all, additional storage, like any technological advance, only serves to raise the ever-raging disk real estate competition to another level. I've worked with a lot of producers, and when size constraints are loosened, the first thing they think is, "Better video, more animation, improved image quality, greater content!" Sound is usually pretty far down on the list. Even at 8-bit and 11kHz, I've maxed out my digital audio megabyte budget for a title in a flash. Multidisc CD titles like *7th Guest* are evidence of that.

Second, the ridiculous size ratios — about 10k/min for MIDI vs. about 44k/sec for a 16-bit, 22kHz mono digital audio) — are only a part of the problem. Of greater concern is data throughput. Worst case, a CD-quality digital audio file requires a transfer rate of about 176kps, overwhelming the 150kps spec defined by MPC Level 1. Best case, 16-bit, 22kHz mono (the minimum for acceptable digital music) still would require 44kps, or almost 1/3 of the total throughput, infringing on the performance of any simultaneous animation, graphics, or full motion video.

Third, seek time. An MPC Level 1 CD-ROM takes an average of one second to locate a file on the disk. Obviously, you can't be jumping back and forth between a graphic file and your digital file, unless you don't object to sec-by-sec gaps in your music. The fix is to interleave the video and audio data into one file, the technique employed in QuickTime movies, which is fine for linear playback but very limiting for an interactive game.

Which brings me to the final and most important point: interactivity, *the* key feature of multimedia. MIDI music allows real-time changes in the soundtrack, using such features as looping, conditional branching, dynamic volume and tempo control, and sequence layering, in response to user input. Digital audio playback is pretty much stop and start, though some third-party drivers allow real-time mixing of multiple digital files, but this gets right back to the throughput issue. Also, using the MIDI ports for music frees up your DMA channels for such multimedia essentials as digital sound effects and narration.

This is not to say that 16-bit audio doesn't have its place — say, for a killer opening sequence or partial-screen, full-motion video. But the real saving grace for musicians is wavetable synthesis, which provides improved audio performance while being transparent in every other respect. This technology is being supported by all the major sound card manufacturers, is really coming into its own in '94, and will only get better as the big boys, like Roland and Korg, begin establishing themselves in multimedia. The bottom line, as the Fat Man says, is how well you can affect someone emotionally with your music. Platform limitations serve as a great equalizer, such that the composition must stand on its own merits and not depend on an awesome, layered, multisampled, megaprocessed patch.

Hamilton Altstatt
Knowledge Adventure
Glendale, CA

Your story on multimedia doesn't include one word about the Amiga, even though that platform rules the multimedia market. Maybe you should have called one of the 1,400 American television stations that use the Amiga for multimedia production, or any of the major film production companies in Hollywood. I've been enjoying CD-ROM multimedia with my Amiga for quite a while. Sad to say, you Mac and IBM assholes are stuck in your operating systems' hierarchies, which drastically limits the selection of CD-ROMs available to you. Oh, right: The new Macs can read DOS; too bad it took 12 years for Apple programmers to do something most Amigas have done for a long, long time.

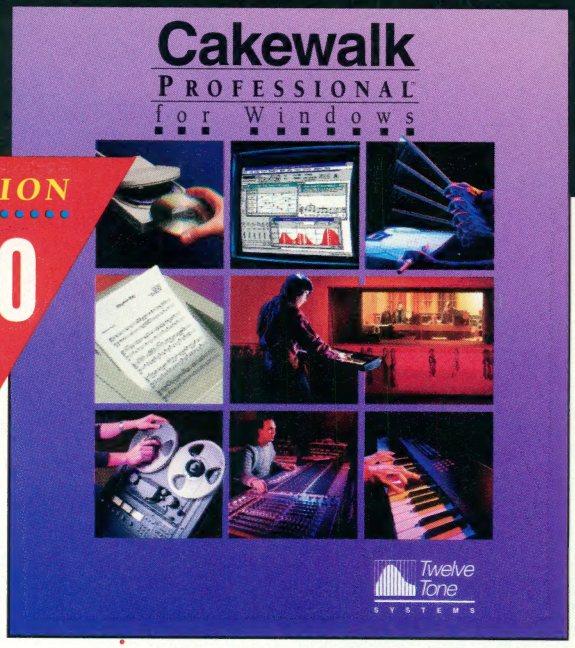
When Commodore went Chapter 11 in the U.S., it sure wasn't because of their fine technology. It was due to the fact that CBM, being a European company, didn't need the American market, and didn't advertise. IBM and Apple, on the other hand, spend more money on promotion each year than on R&D. As a staff reviewer for three of the country's leading underground electronic music magazines for more than 15 years, I'm sick of supporting your Dark Age antics. Please cancel my subscription immediately, and spare me the bullshit.

Ben Kettlewell
Provincetown, MA

Jim Aikin's Guest Editorial ["Multimedia Mon Amour," July '94] made me laugh. Why? Well, here's a complete account of my equipping an Apple Macintosh with a CD-ROM: (1) Drag some software into the computer's system folder. (2) Plug the CD-ROM into the back of the Mac and into a wall outlet. (3) Restart the machine. (4) Load the

Continued on page 70

PLAY HARD.



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Tired of music software that's hard to work with? Spending more time making tech support calls than you are making music?

Then bring in the Professional.

Cakewalk Professional remains the leading MIDI sequencer for Windows today. It's powerful, fast, stable, and yes — extremely usable.

And while other music software companies scramble to release something on the Windows platform, Twelve Tone Systems is now shipping the third major release of its award-winning sequencer.

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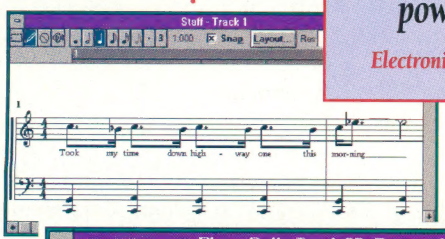
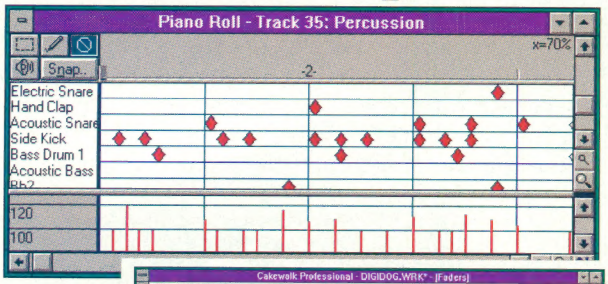
> *Electronic Musician, 3/94*



GRAB A GROOVE

The new Groove Quantize option lets you "steal the feel" of one track, and use it to quantize another. Cakewalk's own groove format supports note start-times, durations and velocities. Also works with DNA Grooves.



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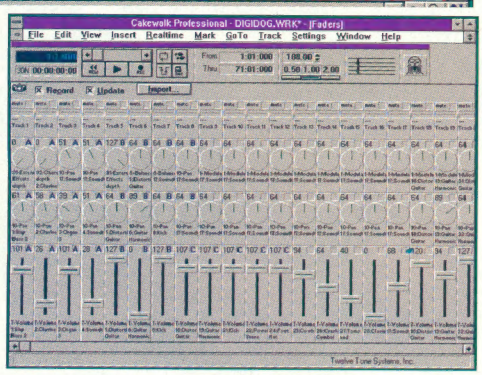

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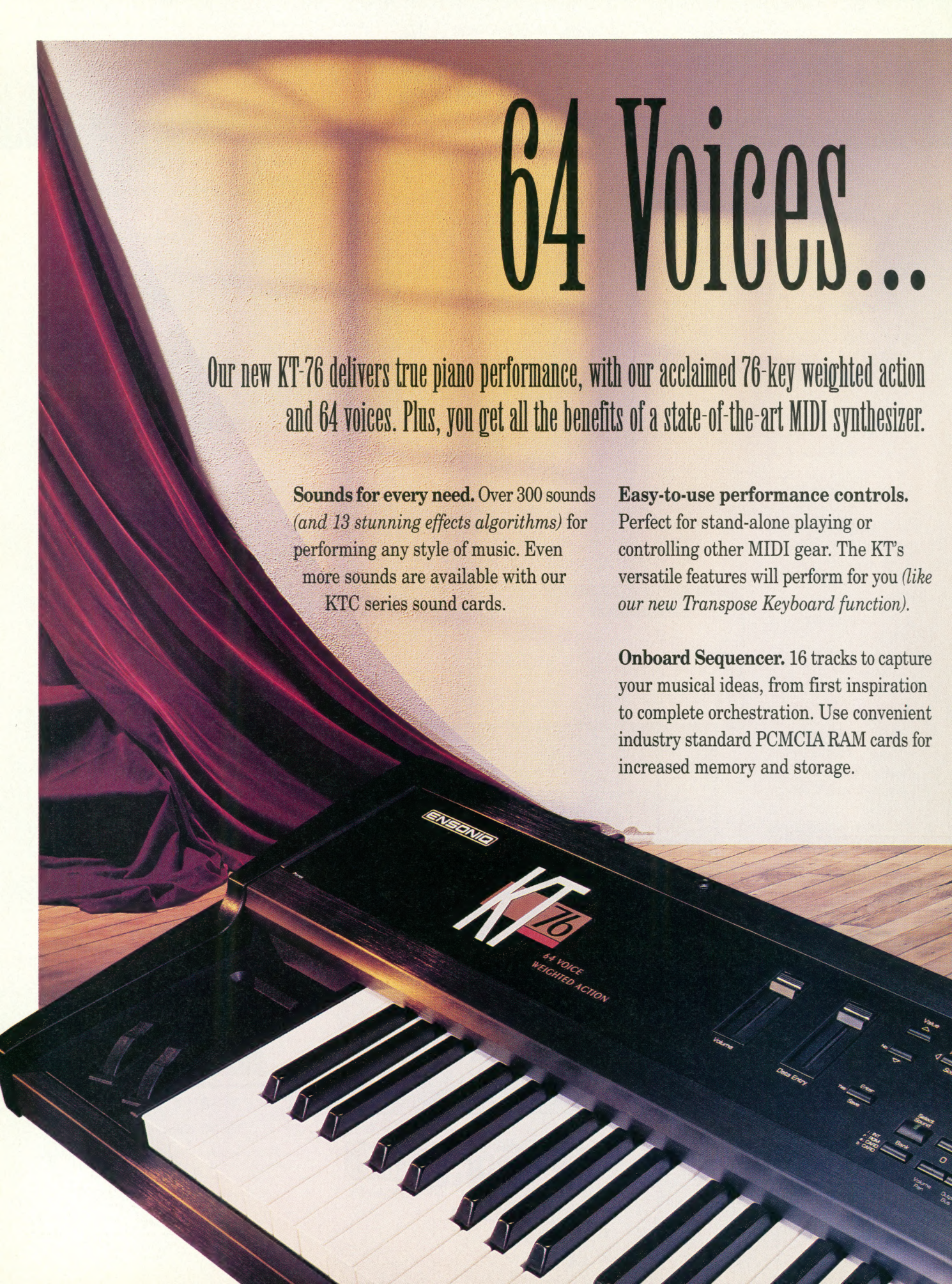

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WORLD VIEW

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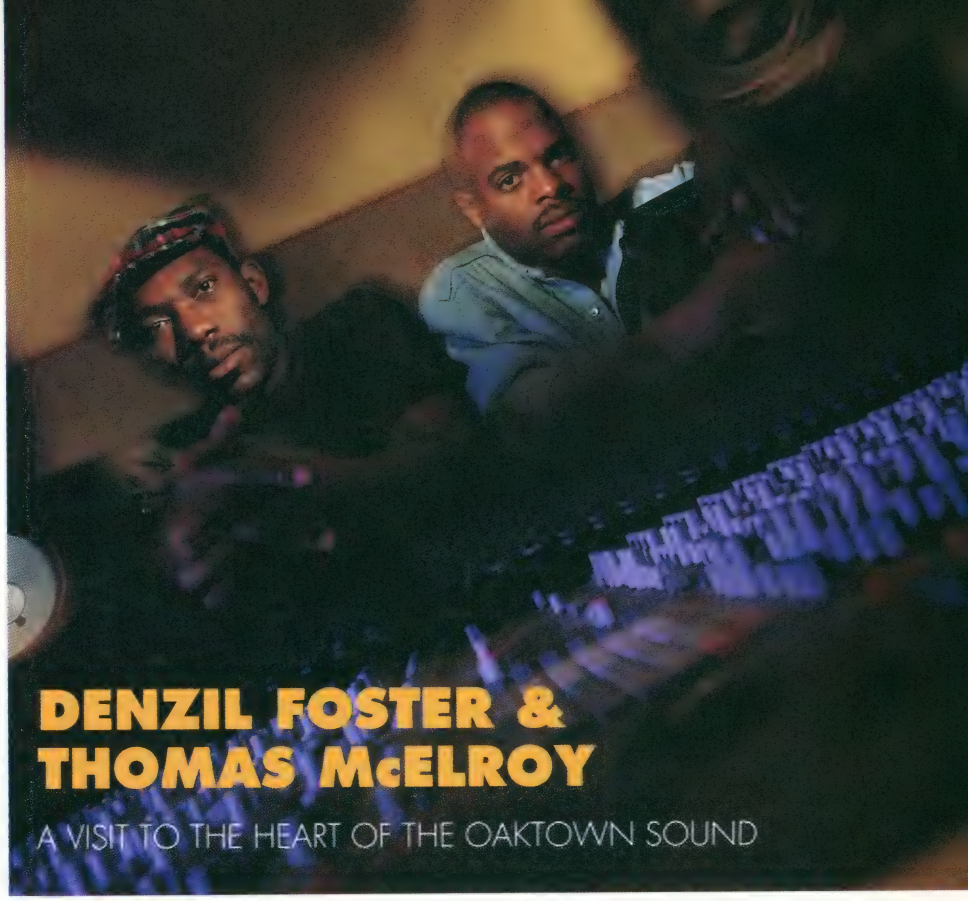


DENZIL FOSTER & THOMAS McELROY

A VISIT TO THE HEART OF THE OAKTOWN SOUND

FM Studios, headquarters for the hot production team of Denzil Foster and Thomas McElroy, is mainly empty. Hidden behind tagged walls in Oakland, it includes a production room that's crammed with gear, a funky hangout space with a sprawled-out leather couch and what's left of yesterday's lunch, and enough studio to pump out hits for such clients as En Vogue, Digital Underground, and Tony! Toni! Toné! But right now we're standing next to Foster in what constitutes most of the facility: a vast, bare warehouse.

"This will be our main room," Foster gestures, blueprints in hand, "right here in the middle. We're gonna keep the high ceilings. The rehearsal studio will be here, and storage back there. Later on there'll be a mastering room, another small studio, and offices. Then there's the upstairs area. . . ."

Slowly the picture takes shape: By late October, if all goes well, FM will be filled with receptionists, accountants, and other staffers. Above all, there will be music — the sauntering grooves and jazz-inflected hip-hop that have already earned this duo recognition in a business that's cut-throat competitive. With Jimmy Jam and Terry Lewis in Minneapolis, Babyface and L.A. Reid in Atlanta, and Teddy Riley in Virginia, FM rules the West Coast, and Foster and McElroy are masters of the Oaktown sound.

In their work for other clients, as well as on their own recent album, *Once in a Blue Moon* (released under the name FMob by Eastwest Records America), they work loosely, improvisationally. Both play keyboards, with McElroy by admission the more advanced technician. When writing together, they often trade ideas on the Rhodes and other hoary machines piled in their control room. This, McElroy points out, brings a live feel to their work from the start.

"The old-school R&B was a little more organic than stuff is now," says McElroy, trying out a few chords on his Yamaha CP-30. "Now, with the software, it's more manipulated. And there's a tendency to try to save money and studio time, so you do things at home by yourself, as opposed to doing it in a rehearsal studio over and over until you get it so you can do it in one take with a full band. When you're thinking 'old school,' you're trying to capture an overall feeling instead of working bar by bar."

There's plenty of '90s gear at FM, but it's approached here with what might be called a '70s aesthetic. Steinberg Cubase and Opcode Vision 1.4 are up and running, though more often used to record real-time keyboard parts than to indulge in hair-split editing. "We don't manipulate parts too much, unless they're samples," McElroy explains. "And even then, I'm thinking, 'People ac-

CAREER UPDATE

Stevie Wonder has decided to relocate to Africa. In a recent speech before the International Association of African American Music, Wonder reportedly indicated that he was "in love" with Ghana and would soon move there. Looks like we'll have to fly our correspondents a bit further now in order to have the elusive keyboardist not show up for interview appointments. . . . Another ambitious project is due from **The Orb** in September. Titled *The Seven Wonders of the World* as we went to press, the double CD will feature musical portraits of the Pyramids and other imposing phenomena. . . . **Herbie Hancock** headlined at the Digital World interactive music media festival in Los Angeles last June, though the intrusions of several other "wanna-be" keyboard jammers reportedly diluted the impact of his performance. . . . **Brian Eno** has been keeping a busy schedule in New York, collaborating simultaneously with **David Bowie** and **Laurie Anderson** on upcoming productions. . . . **Greg Phillinganes** shares production credit on the upcoming album by MCA newcomer **Carl King**. . . . **The Future Sound of London** is working with **Cocteau Twins** and **Robert Fripp** on separate projects. . . . **U.K.** is reportedly reforming, with founding member **Eddie Jobson** back at the keys. . . . On Sept. 24, **Dudley Moore** hosts and performs at a Carnegie Hall benefit on behalf of Music For All Seasons, which sponsors concerts and recitals at hospitals, nursing homes, prisons, and other institutions. . . . GRP will release an orchestral collection by **Dave Grusin** in October. . . . Congrats to **Anthony Davis**, winner of a composition fellowship from the New York Foundation for the Arts. Davis has been commissioned to write a major piece in celebration of the Atlanta Symphony Orchestra's 50th anniversary; the premiere performance takes place at the Woodruff Arts Center on May 25, 1995.

ON STAGE

ARS ELECTRONICA '94. Interactivity was at the heart of the 15th annual Ars Electronica Festival, held last June in Linz, Austria. Two Amer-

PHOTO: RICHARD MORGENSTEIN

tually played this, and that's what made it so happenin'.' That's what I'm trying to capture."

They're quick to point out devices pioneered in their work that later became standard R&B fare — their guitar crunch sample in En Vogue's "Hold On," the jabbing orchestra hit, their work with the Roland TR-808 as far back as '82, the marriage of rich harmony vocals and raw hip-hop rhythm. But this fidelity to the live feel, both maintain, is what ties it all together.

"A lot of people are getting into that now," McElroy notes, "because they're learning that it's better to just play something than to get hit with a lawsuit after taking a 32-bar sample of somebody's song. Acid jazz helped too. Maybe some hip-hop artist or R&B producers will hear these guys from London and say, 'Damn, they sound good! I don't see no drum machines. I don't see a DAT player. How'd they do that?' They start inquiring about it, and they find out these guys just know how to play. So they either call them or start learning to play themselves."

The formula is working for Foster and McElroy; their August calendar includes sessions with Fine Young Cannibals and British chanteuse Gabrielle. But they're not taking success for granted. Looking into the shadows of their studios-to-be, Foster quotes a familiar adage: "'You're only as good as your last hit.' Man, it's so true. That's why doing a quality tune is so much better than just doing a tune to make quick money. You've got to have pride. And you've got to keep moving, because if you turn and look back, man, it can be gone, like a mirage."

—Robert L. Doerschuk

ican artists, **Loren** and **Rachel Carpenter**, with help from the Austrian Stadtwerkstatt, transformed the town's central plaza into an intelligent environment in which attendees could trigger sound and visual events. A moderator explained the various activities and rules, in effect presenting the event to the public as a gigantic outdoor computer game. Throughout the festival, audience input was maximized by means of lasers, mirror sheets, electronic media, and an enormous projection screen. **Jaron Lanier**, **Mark Trayle**, **Elliott Sharp**, and the

PHOTO: PETER DAMROTH

REV. BILLY C. WIRTZ

ROAD STORIES

CHAPTER 2: MACEO & MOON

O ye of little faith and uneven tire inflation: It's a sundrenched scorcher of a porch-sittin' afternoon here in my hometown of Chromosome, N.C. A truly stupendous day for the opening of the Rev. Billy C. Wirtz Semi-Forgotten Piano Players' Hall of Fame and International School of Confucian Go-Go Dance.

A large, boisterous crowd of the musically faithful has gathered here at the Hall of Fame, located in Banquet Room D of the Izzitt Inn Motel. Today we induct our two charter members, two great piano players who never got the credit they deserved. Why not? Maybe if they'd married their cousins, or worn some wacky glasses, or done the soundtrack to a movie about an insurance executive from Detroit who runs away to live among the dolphins, they'd be better known. Who knows?

The lights in the banquet room are dimming. Excuse me, that's my seat. . . .

At 6'5" and 150 lbs., our first inductee could have been a rassler, but fortunately for us he chose to play the blues. Big Maceo Merriweather was born into a family of 12 in Newman, Georgia. The family moved to Atlanta, where Maceo played his first paying gigs. Atlanta at that time was a hot, grimy town, with few good gigs, no baseball team, and lots of rednecks, so he moved north, first to Detroit and then to Chicago. In the Windy City, he hooked up with ace guitarist, singer, and writer Tampa Red. The combination clicked, and soon they were one of the top duos around. At bar gigs and rent parties, they played stomps and boogies, slow blues and raucous novelty tunes, simple and straight-ahead, and all with a wicked groove.

The fuel for that groove was Maceo's legendary left hand. The fact that he was a southpaw is immediately obvious when you hear him play. Not only was he fast and technically superb; he played with ferocious power in the bass. Check out his jaw-dropping signature lick on "Chicago Breakdown," heard on *Big Maceo: King of the Chicago Blues Piano* (Arhoolie Records, 10341 San Pablo Ave., El Cerrito, CA 94530). A whole generation of pianists copied his style in the '50s, and blues artists still sing his classic "Worried Life Blues."

Around the same time Maceo was playing up north, the juke joints in Texas were jumping and the bottles were bouncing to the beat of our next inductee. Aubrey "Moon" Mullican was born at Corrigan, Texas, in 1909. (No one knows, or will admit, where he got his nickname — maybe from some action he took against an annoying bar patron.) After having an argument with his dad (probably the usual "You wanna do *what* for a living?! That's not a real job!"), Moon left home at 16 to play in the cathouses around Houston.

It was during those early years, and in later gigs with Western swing bands, that he developed his pioneering approach of fusing boogie woogie and hillbilly music. He played a simple eight-to-the-bar style or boom-chuck bass, overlaid by rolling triplets, blazing single-note runs, and a *Webster's Dictionary* of broken major sixth patterns in the right hand.

Although Moon was known mostly as a ballad and novelty singer, he was making rock and roll records in the late '40s with great sidemen like Speedy West and Jimmy Bryant. A few years later, a young Jerry Lee Lewis would virtually carbon-copy Moon's style and make a fortune. By then, Moon was almost 50 — too old to be a teen idol. He did, however, join the Grand Ole Opry and continue to write and record great songs. His health began to fail in the '60s, and on New Year's Day in 1967 he left for that heavenly honky-tonk, where the piano's always tuned and no one yells for "Color My World."

Ask for anything by Moon or Maceo at your local mall store and you're sure to get a test pattern. A better alternative is to call Roots & Rhythm at (510) 525-1494, ask for Frank Scott, and tell him I sent ya!

They're flicking the lights on and off, which means we need to vacate the banquet hall so they can set up for the Mennonite Fashion Show. Check out the velveteen likenesses of Maceo and Moon on your way out, and as you pass by the school, gentlemen, please do not touch the dancers.

This is Rev. Billy saying so long from Chromosome, where men are men and "pianist" can't be said on the radio. ■

Rev. Billy C. Wirtz's is director of the First House of Polyester Worship. His latest album, Pianist Envy, *is available on the Hightone label.*

Soldier String Quartet, all from the U.S., and Austrian pianist **Friedrich Gulda** turned in highlight performances, but the Golden Nica, the trophy for outstanding achievement at the festival, was awarded to German computer music composer **Ludger Brümmer**.

INDUSTRY UPDATE

COMPTON'S OPENS MI LINK. Interactive media and the music industry will move another step closer in August as Compton's New Media launches its new label in Los Angeles. Prince, John Lennon, and Heart are among the artists who are being represented on CD-ROM by Compton's. Norman Bastin, the company's senior vice-president and general manager, predicts that interactive music is about to become the hot new development area. "This is only the second time in my career that I have seen a real excitement from consumers," he told *Keyboard* correspondent Jack Olmsted. "The first was back in 1987, when we came out with our encyclopedia and people said, 'I need to own one.'" Bastin believes that the MTV generation can see the "value added" into interactive music titles and will understand what they are buying. Compton's is owned by the Tribune Company, with assets of more than $3 billion.

JAPAN GETS INTERACTIVE. Nippon Telegraph & Telephone and Silicon Graphics have agreed to collaborate in building a national interactive multimedia service system in Japan. This system will link consumers, businesses, and government ministries to new kinds of information services and computer power. Applications will range from remote medical checkups to video, interactive games, and shopping on demand. Plans are to have the system up and running in late 1995. NTT and Silicon Graphics will also join in promoting an open standard that would allow the information infrastructure to expand globally.

A BETTER WERSI. Contrary to reports recently published in *Keyboard*, Wersi is still distributing in the U.S. market. The German firm had spent a year in receivership before its founders, Reinhart and Wilhelm Erich Franz, sold its assets to three new partners, Udo Spindler, Guntram Kischel, and Joachim Rankenhohen. Sweeping changes have since been instituted, with production farmed outside of the company, revisions in the sales division, and a revamped marketing approach. Keyboards are now the

SESSIONS
DATEBOOK
ROD ARGENT

After more than 30 years in the musical trenches, Rod Argent is one of rock's most seasoned veterans. As a member of the Zombies in the '60s and the founder of Argent in the '70s, he contributed sizzling Hammond and electric piano to a number of classic singles. As subject of this month's Session Datebook, the 49-year-old Argent looks back on highlights in his recording career.

• **The Zombies, "She's Not There"** (from *History of British Rock, Vol. 1 & Billboard Top Rock 'n' Roll Hits*, both on Rhino). "We were going to release a version of 'Summertime' as the first single. [Producer] Ken Jones suggested we write something ourselves. So, with the incredible confidence and arrogance and naïveté of youth, I thought, 'Well, I can write something that's better than the stuff that's around.' It reached Number 11 in England and went to Number 1 in America. It was the second song I ever wrote."

• **The Zombies, "Time of the Season"** (from *Odessey & Oracle*, Rhino). "One of my favorite songs for ages had been the Miracles' 'The Tracks of My Tears.' I'd always thought that he [Smokey Robinson] sang, 'It's the close of the season to trace the tracks of my tears.' When I found out he actually sang, 'If you look closer it's easy to trace the tracks of my tears,' I was really disappointed. So I thought, 'If he's not going to use it, then I am.' 'Close of the Season' became 'Time of the Season.'"

• **Argent, "Hold Your Head Up"** (from *Argent Anthology*, Epic). "This one was basically Chris's [co-producer Chris White's] idea. He had the riff; my contribution was more in the shaping of the song. More than anything else, I always try to put emotion into the music. For *All Together Now* [the album, now out of print], we moved studios from Sound Techniques to EMI [*i.e.*, Abbey Road]; we consciously wanted that heavier sound. 'Hold Your Head Up' was a first take."

• **Original Cast Production, *Cats*** (Geffen). "I thought, 'I'm 30 years old. It's time to explore some different avenues.' I started doing loads of sessions, for the Who [*Who Are You*], Roger Daltrey [*One of the Boys*], and Andrew Lloyd Webber [*Variations*]. After working with Andrew, he asked me to do the first five weeks of *Cats* in London. Later, I did *Starlight Express*; that's where I met Pete [drummer and co-producer Peter Van Hooke]."

• **Joshua Kadison, *Painted Desert Serenade*** (SBK, dist. by EMI Recording Group, North America). "The performance is everything. If you're recording a singer, everything should stem from the singing. We tend not to build up a huge track and, at the last minute, plunk a voice on top of it; we try to get the master vocal at an early stage, so that everything being played on that track is a performance that reacts with the master vocal, almost as in a live situation. On the stuff that I do with Pete, like this album, he and I also play a lot of the instruments. That satisfies the need I have to create those kinds of parts."

—Ben Cromer

PHOTO: BEN CROMER

main focus at Wersi, particularly electronic organs, high-end home instruments, and digital pianos designed to resemble acoustic pianos while retaining sequencers and other electronic features.

KORG REVS UP. The folks at Korg bet on the right team at this year's Paris-Dakar-Paris Rally. Major corporations traditionally invest in many of the participants in this annual auto race; some have sunk as much as $100 million into equipment, development, materials, and human resources for one or another group of competitors. Team Aoyagi, Korg's choice, ran on a comparatively tight budget, with just one driver, one navigator, and no maintenance crew. Even so, they managed to win five out of the six races in which they took part and placed 12th overall in a field of 184 four-wheel vehicles. Sounds like they got their money's worth, presumably without dipping into the R&D reserves.

BULLETIN BOARD

TEN YEARS OF MUSICTECH. The tenth annual Gand Musictech Expo takes place Sept. 17 at the Radisson Hotel in the Chicago suburb of Lincolnwood, Illinois. Sponsored by Gand Music & Sound, the event will feature more than 50 displays of music hardware and software in five ballrooms, with Yamaha, Roland, Korg, E-mu, Ensoniq, Digidesign, and Opcode among the confirmed exhibitors. A preview party will take place on the night of Sept. 16. For details and ticket information, write Gand Music & Sound at 780 Frontage Rd., Northfield, IL 60093, or call (708) 446-4263.

COMPUTERS VS. DRUMMERS. Tired of robot drum machine grooves? Well, you could hire a real drummer. If that seems too radical, try waiting for the next step in interactive drum programming. According to J. Devin McAuley, a doctoral candidate in computer and cognitive science at Indiana University, the last nail in the coffin of human drumming is just around the corner. Last June, before the Acoustical Society of America in Cambridge, Massachusetts, McAuley unveiled his computer model for adaptive oscillators capable of playing drum parts behind live performers at a level of interactivity previously achieved only by live

MUSIC IN THE *MYST*

HOW A MINIMAL SYNTH/SEQUENCER SETUP TURNED THE TRICK ON THIS YEAR'S HI-TECH CD-ROM HIT

Named after Jules Vernes's *Mysterious Island*, *Myst* is a multimedia experience second to none.

You find yourself on a small island — half a dozen buildings, enigmatic sculpture, a stubby spaceship crouched on its launching pad. Waves lap against the shore, and a breeze whistles among the trees. There are cranks you can turn, buttons to push, mysterious caverns to explore. What are you supposed to do with all this stuff? That's part of the puzzle. You've entered the world of *Myst*.

This CD-ROM game (released first for the Macintosh but also available for Windows PC) became a best-seller because of its stunning computer-modelled 3D graphics and the simplicity of its user interface, which allows players to enter more fully into an alternate reality. Created by brothers Rand and Robyn Miller, *Myst* sets a new standard in interactive gaming.

Music plays a lesser but important role in evoking the quiet, haunting mood of *Myst*. Many of the room interiors have their own themes — quirky, sensuous tunes that complement the moody lighting and exotic artifacts. Surprisingly, the Millers didn't hire a composer; Robyn did the soundtrack himself. He created the entire score in about three weeks, working on it only in the evenings. During the day he was fully occupied creating the game's graphics. "Growing up," he recalls, "I switched back and forth between music and art. I got more into the art end of things when it became my job. I still love music, but I haven't had much time for it."

Big recording studio? No, the whole score was done on an E-mu Proteus MPS synth, with Passport Master Tracks Pro as the sequencer. Not even multitrack tape was employed; what you hear in the final game came directly out of the sequencer and the Proteus. "When it came time to do this project," Robyn reports, "frankly I just didn't know what was out there in the way of equipment — I still don't, because it's not something I have time to do a lot of research on. But it seemed to me that I had a ton of power just with that setup."

Robyn advocates doing game soundtracks as audio rather than General MIDI data. "When you use the audio," he explains, "you have a lot more control. What scares me about using MIDI data is, what kind of device is the person going to have to listen to it?"

He's willing to sacrifice audio quality to retain that control: Most of the music in *Myst* was stored on disk in 8-bit format with an 11kHz sampling rate — and at certain spots, crackling distortion is very audible. "It bothers me that I'm the only one who has ever really sat and listened to the music," he admits. "There's a lot more that I did with that music that no one will ever hear. In the opening theme, there's a hi-hat track that was completely lost."

Robyn sees similarities between scoring a game and scoring a movie — but he sees differences too. "In a movie you can manipulate the person's emotions so well, whereas in an interactive game environment the person does what he or she wants to do. You want the music to work so that no matter what they do, the music will go along with it. If they walk out of a room, the music fades out and stops behind them, and they don't really notice it that much. The music doesn't come on with a bang, it's just there. It creates a mood, but not an overwhelming mood. I've heard a lot of CD-ROMs where the songs and the melodies are so prominent that it takes away from the nonlinear feel of the game. The music in *Myst* doesn't have any big *rum-pum-pum*, you know, recognizable parts that stand out.

"There are so many talented musicians out there — I hear from new people all the time who can write good music. And I'm a little surprised that more multimedia developers haven't found these good composers. It seems that most of the music all sounds kind of the same. Either it's real rock-and-roll, heavy-metal sounding, or it's sci-fi sounding. I haven't been real ultra-satisfied with any of the music that I've heard on other CD-ROMs."

Currently Robyn, his brother, and their development team at Cyan are hard at work on the sequel to *Myst*. They've replaced their aging Macintosh imaging system with new machines from Silicon Graphics, and they're grappling with problems like how to make an animation of a trickling stream look realistic from a dozen different angles. The music will come later. When we spoke to Robyn, he wasn't even sure yet whether he'll be doing it himself.

Gee, maybe I should send him a demo tape. Nah — I'd rather wait and see the game when it's finished, so I can play it without knowing how to solve the puzzles. *—Jim Aikin*

drummers. He ran his model through tests similar to those used to measure human response to rhythm, and found critical similarities: Like real people, the McAuley program had a "preferred" tempo, grew more sensitive to variations with regular than irregular rhythms, and tended to overestimate short intervals and understimate long intervals in sound. These results, he explained, made it possible to build a system of adaptive oscillators, each set to a different preferred tempo, that could track and play around input from live players. "Some oscillators would entrain to what could be called the beat," McAuley said, "while others would discover larger metrical units, such as the measure, [to create] a sense of how rhythm might emerge from the collective interaction of a population of 'neural' oscillators in the human brain." Maybe so, but we see a folk legend coming together, with McAuley's system booted and ready to rock in one corner, and John Henry behind a set of traps in the other.

THE LEGACY OF IVOR DARREG. **Ivor Darreg** passed away early this year. Known also for building a "justifying" organ in the '60s and an electronic keyboard oboe, Darreg was particularly interested in alternative tunings. Through his efforts, a network of like-minded composers and scholars, called the Xenharmonic Alliance, was formed. This union of microtonalists, just intonationalists, and experimental instrument builders is now expanding its activities as a memorial to Darreg: A member database is being assembled, with plans to ship it to members twice a year, along with news of compositions, published articles, and other accomplishments. Also, plans are being considered to store graphics on hard disk for lecture/concerts on alternative tunings. If you're interested in finding out more about Darreg and the ongoing activities of his organization, write the Xenharmonic Alliance c/o Gary Morrison, 13036 Staton Dr., Austin, TX 78727-4513, or call (512) 832-0133.

DIGITAL MYSTERIES. Brooklyn's Basement Recordings continues its program of free music technology instruction on Aug. 13, when it hosts a seminar on digital music production and media integration. The ongoing series, titled "Capturing That Which Has Never Been Captured Before," tackles such topics as MIDI, 3-D modeling, interactive computing, and multimedia for students at all levels of proficiency, beginner to pro. To take part in this or any other session in the cost-free program, contact Terrance Tom at Basement Recordings, 348 E. 51st St., Brooklyn, NY 11203, or call (718) 485-7120.

THREE TO GET READY. . . . America's first three-piano rock and roll bar opened its doors last June. Located in Orlando, Florida, Blazing Pianos is dedicated to rock's great piano bashers. Visitors enter through an abstract piano that stands 17' wide by 12' tall, then pass through a hall festooned with concert shots and framed album covers that celebrate the likes of Jerry Lee Lewis, Billy Joel, and Elton John. Classical and jazz pianists are remembered in an adjoining room, whose decor includes original sheet music, books, 78s, and a white baby grand with a number of keys autographed by well-known players. In the main room, a 45' bar is done up to resemble a player piano, with 13' musical notes and a glass top fashioned to resemble a lighted keyboard. Each of the three pianos on the club stage is painted fire-engine red. Music is nonstop, with more than a few versions of "Great Balls of Fire," "Crocodile Rock," and "Piano Man" on the menu. Admission is $5 Monday through Thursday, $7 on Friday and Saturday, and free on Sunday. For directions, call (407) 363-5104, or fax (407) 352-3640.

GHOSTWRITER

READIN' TO THE BEAT WRITIN' TO THE RHYTHM

PHOTO:DON PERDUE/CTW

Imagine a starry-eyed 16-year-old tearing open the manual of his newly-bought used Korg M1 and reading: "Data is transmitted serially over the cable as a stream of 0's and 1's at a rate of 31.25 Kbaud. Data transmission is controlled by a Universal Asynchronous Receiver/Transmitter integrated circuit. An opto-isolator at the receiving end provides electrical isolation. . . ."

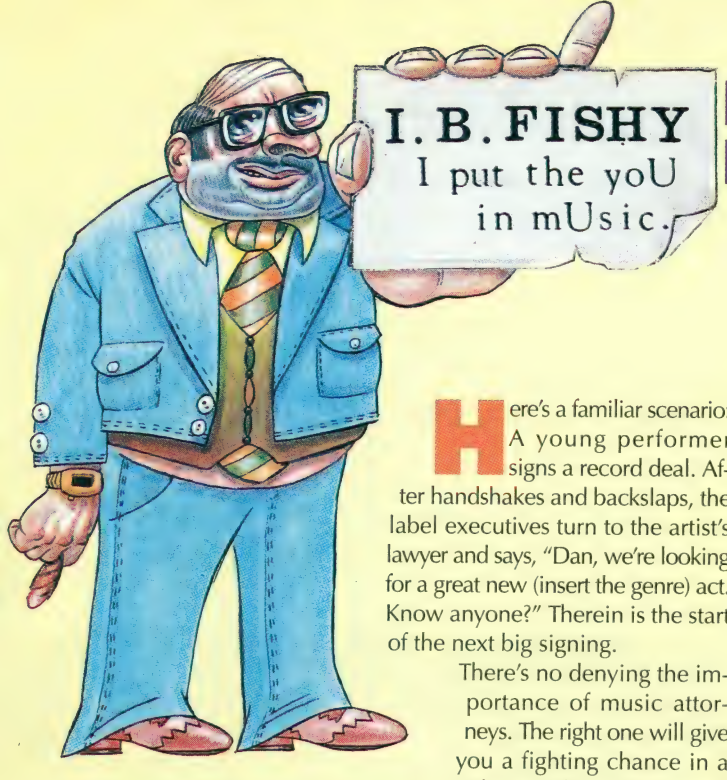
Tough going, even for those who've mastered the three R's. For the illiterate, it's just a hint of nightmares to come. Fortunately, a PBS television show is helping to decipher the mystery of reading in cadences that kids can understand.

GhostWriter aims its educational efforts at urban children aged six through twelve, and music is one of its main vehicles for encouraging kids to learn. "We felt instinctively that music would be an important asset in capturing new viewers, enhancing the drama, and holding kids' attention while the literacy unfolds onscreen," says executive producer Liz Nealon.

One of *GW*'s main characters is Lenni Frazer (Blaze Berdahl), a 12-year-old girl with a passion for rap. In one four-program segment, Lenni gets the *GW* team to help her construct a video. Viewers watch her keep a lyric book, write original songs, and perform. Composer Peter Wetzler explains, "In watching Lenni compose songs with a synthesizer and computer keyboard, the audience is seeing the future of musical composition via MIDI sequencing."

Wetzler scores *GW* in his home studio, a converted church in upstate New York. Using Digital Performer and other Mark of the Unicorn software to drive a Yamaha SY99, a Kurzweil K2000S, Emu's Proteus/3 World and Procussion, and Roland's JV-880 and S-770, along with other synths and samplers, he constructs "learning grooves," or short urban dance riffs that accompany "literacy" scenes of the *GW* team reading and writing its way through each story's mystery. In a recent show, a member of the team wrestles with a drug problem. The motif for this story line appears in bits and pieces, building to a playground scene that juxtaposes bad habits and worse paybacks as the theme evolves into a power ballad sung by Dee Snyder. Aural tidbits from sources as diverse as Korean folk music, Nigerian juju, jazz, and hip-hop serve as building blocks for each episode's music.

Above all, a respect for his young audience guides Wetzler, who insists on "not writing down" to *GW* viewers. "Kids today are exposed to a sophisticated pallette. It's important to feed them a range of styles and not pigeonhole them or their parents." —*Kymm Serrano*



ENTERTAINMENT LAWYERS

A FINDER'S GUIDE

Here's a familiar scenario: A young performer signs a record deal. After handshakes and backslaps, the label executives turn to the artist's lawyer and says, "Dan, we're looking for a great new (insert the genre) act. Know anyone?" Therein is the start of the next big signing.

There's no denying the importance of music attorneys. The right one will give you a fighting chance in a cutthroat industry. The wrong one could tie up your career, your money, or your options for years to come. So how do you find the one that's right for you?

Spot the Losers. First, rule out the wanna-bes and outright phonies. A lawyer once told me he was an entertainment attorney because he played piano and did a few contracts for a guy who sold hot music gear out of the back of a truck. Beware the lawyer who dabbles in entertainment law. Beware the lawyer with outdated credentials: "I was the guy who broke Donny Osmond's career." If he or she hasn't been in the thick of this business lately, chances are there is good reason for it. Similarly, beware of the attorney who has no experience with the type of deal you want. One who specializes in publishing in Nashville may not have the background to write a great contract for a rap artist's first deal.

Along with being qualified to handle your needs, an entertainment attorney must also be interested and available. You'll need someone who believes in your talent and market potential. They must have the guts to tell you when your latest demo has flaws or when your contract demands are excessive. They must be willing to return your phone calls within a reasonable amount of time. Having a famous name as a lawyer does you no good if he or she is too busy to finish your contract on time or to answer your questions.

Find the Winners. Now that you have a better idea of who you're looking for, how do you track him or her down? Cold calls to high-powered lawyers will generally lock you into screening-and-hold hell. If you are a newcomer to the business, begin by contacting your local arts organization or the Volunteer Lawyers for the Arts; to find the nearest chapter, call their Art Law Line at (212) 319-2910 or write the national office at 1 E. 53rd St., 6th Floor, New York, NY 10022.

Meaningful contacts give you even a better place to start. Begin your call with the appropriate references: "Phil Collins's MIDI technician referred me to you." Succinctly explain who you are and what you want. Find out what you need to know to determine if this is the lawyer you need. If he or she is, follow up professionally by sending along your press kit, demo, résumé, and whatever else will prove that you have something to offer. Then see what happens. If this lawyer is too busy or not interested, don't let him or her get off the phone without referring you to someone who may be a better match for your needs. Then continue your screening until you find the right combination of interest, skills, and availability. The process may take months and involve countless phone calls and false starts. It's like finding your perfect mate: incredibly frustrating while you're searching, but truly rewarding once you've succeeded.

Sounds like a lot of work? It is. But isn't your music worth it?

—Daria A. Marmaluk-Hajioannou

Daria Marmaluk-Hajioannou is a working musician who performs a mixture of original, folk, and ethnic music. She also writes and lectures on how to succeed in the music business.

NEED A DISTRIBUTOR? Call your auto mechanic. No, wait — pick up a copy of Disc Makers' *Directory of Independent Music Distributors.* This 16-page booklet lists more than 350 contacts who can help place your CDs and cassettes in stores nationwide. In addition to addresses, phone numbers, and fax numbers, you'll find helpful homilies scattered throughout the directory: "Always be polite and professional," "Always be honest about your accomplishments and sales history," "Always change your oil every thousand . . ." oh, never mind. Copies are free through September to all who call (800) 468-9353 or (215) 232-4140.

MUSIC TECH MAJOR. Red Wing Technical College offers a degree in repair and maintenance of electronic musical instruments. The curriculum for certification as an Electronic Music Technician involves hands-on work with synths and samplers, sound systems, amplifiers, MIDI equipment, guitars, and other gear, both current and vintage. Courses in technical writing, computers, and basic electricity are also required, although performance instruction is not. A diploma or associate degree in applied science can be awarded after as little as two years of study. Information on tuition, financial assistance, application procedures, and other relevant concerts is available from Red Wing Technical College, 308 Pioneer Rd., Red Wing, MN 55066; phone (612) 388-8271 or fax (612) 388-6368.

ANALOG IN AUSTRALIA. Founded by five Australian synthesists in 1992, Clan Analogue is now an international collective dedicated to innovation in electronic music. Though based mainly in Sydney and Canberra, the organization includes 50 members and 250 correspondents, who communicate through monthly meetings, communication networks, and a house magazine, *Kronic Oscillator.* Its activities include promoting live performance and producing EPs that feature members' work; upcoming releases include a video, a free multimedia PC demo, a double CD set, a range of cassettes, and, further down the line, CD-ROM projects. Membership costs $30 Australian per year. Write to Clan Analogue at Box E384, St. James NSW 2000, Australia. Information is also available via E-mail at clan@droid.apana.org.au or clan@f634n.712.z3.fidonet.org.

ILLUSTRATION: PETER BENNETT

Introducing the Roland S-760 Digital Sampler, a professional sampler for the kind of cash mere mortals actually have. A single rack space digital powerhouse that does virtually everything kazillion dollar units do and more. Including 48kHz stereo sampling, built-in digital EQ, multi-mode filters, extensive wave editing and everything else you would expect from a Roland sampler.

And right out of the box it's ready to use as a 32-part multitimbral musical instrument or a full-fledged studio production tool. With its diversity of sounds and infinite sonic possibilities, unsurpassed fidelity and sound manipulation capabilities, the S-760 will open up new worlds of sound, even if you already have a full rack of synths.

We should also mention that the S-760 can be expanded to 32 megabytes of memory, providing a total of more than three minutes of stereo sampling time at full bandwidth.

And the built-in SCSI interface lets you plug in virtually any storage device, including CD-ROM drives, hard disks and removable optical disk drives.

Edit your sounds with monitor and mouse.

Our large high-res LCD makes it easy on the eyes when you're editing without an external monitor. And with the optional OP-760-01 Board,

If you don't think you're quite ready for a sampler, think again.

you can connect the S-760 to either a dedicated monitor or your ordinary color TV, and use a mouse for point, click and drag editing. View and access all editing operations such as loop, time stretch and cut/splice functions in an intuitive, easy-to-use graphic environment without having to use an external computer with dedicated software.

The Option Board expands the S-760 with lots of advanced functions like S-video, RGB and composite video output plus digital I/O, transforming the S-760 into the ultimate high-end sampler.

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Five bucks says you're ready for a sampler. Put down this magazine, pick up your phone and call (800) 386-7575. Ask for our $5 *Sample Archives Demo Disk II* audio CD and our new CD-ROM catalog of Roland and 3rd party sounds. Better yet, put down this magazine and get to your nearest Roland dealer for a real-time demo of the S-760 Digital Sampler. Then you'll know what we've known all along. You're ready.

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Roland Canada Music Ltd., 5480 Parkwood Way, Richmond, B.C. V6V 2M4 (604) 270-6626. COMPUSERVE®: GO ROLAND; 72662,376

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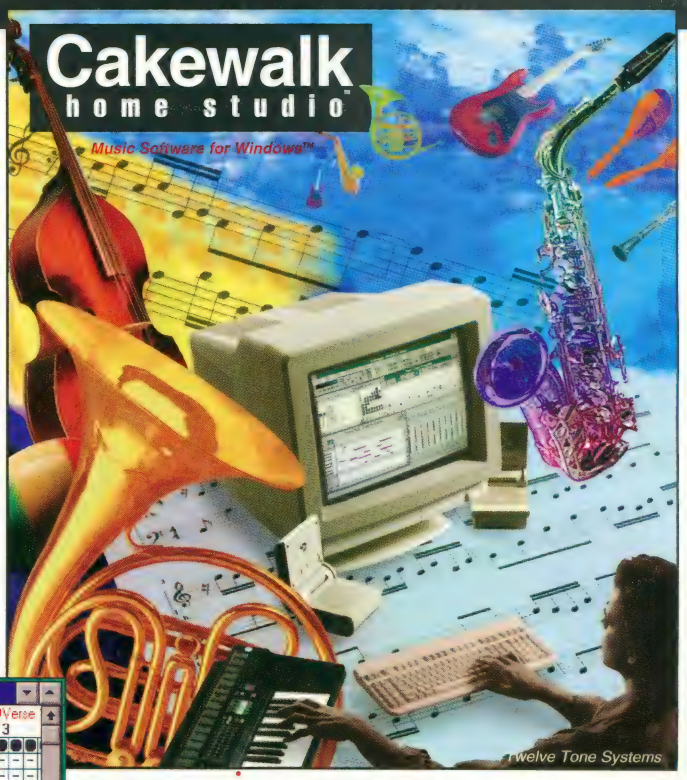
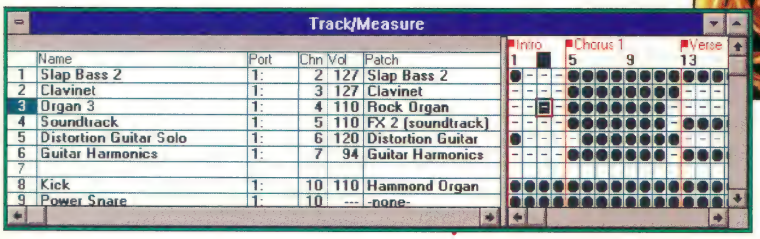
Cakewalk Home Studio is a great way to start exploring the world of music and computers.

Once you turn it on, you'll find many of the essential recording and editing tools that are part of the award-winning Cakewalk Professional™ software.





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Cakewalk Home Studio has everything you need to start creating music with your PC: 256 tracks; Staff, Piano Roll, and Event List views; a 16-track Faders view; and high-quality notation printing.

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- Markers for organizing song parts
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- Displays General MIDI, other instrument patch names
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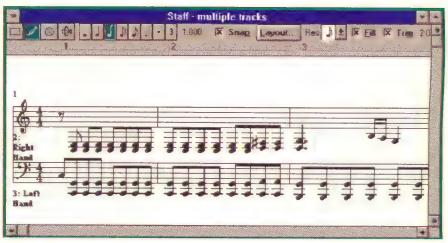

Try It Today

So drop into your local music or computer store, and tell them you want to get started with Cakewalk Home Studio. For the name of an authorized Cakewalk dealer near you, call Twelve Tone Systems at

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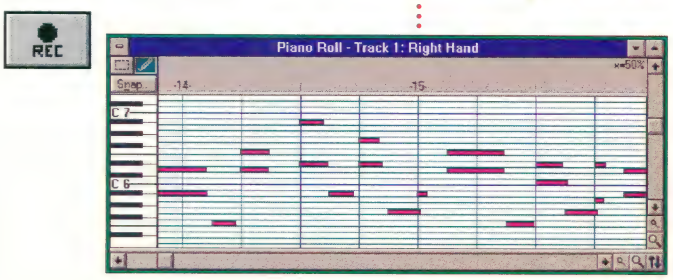


PC Multimedia PC

CREATIVE OPTIONS

CONNOR FREFF COCHRAN

SONGWRIGHTING 1: *TAKE A HIKE*

LET'S GET PRACTICAL, OR at least my brand of it. Odds are (considering where you are reading this) that you either write songs yourself, or work with people who do and are sure you could do better, or are strongly contemplating writing the greatest song ever, someday real soon now just as soon as you get around to it. Whichever it is: Good. Anybody who can enjoy something has the innate capacity to do it, and that means there are millions of silent people out there who could be giving voice to the songs in their hearts with just a little encouragement.

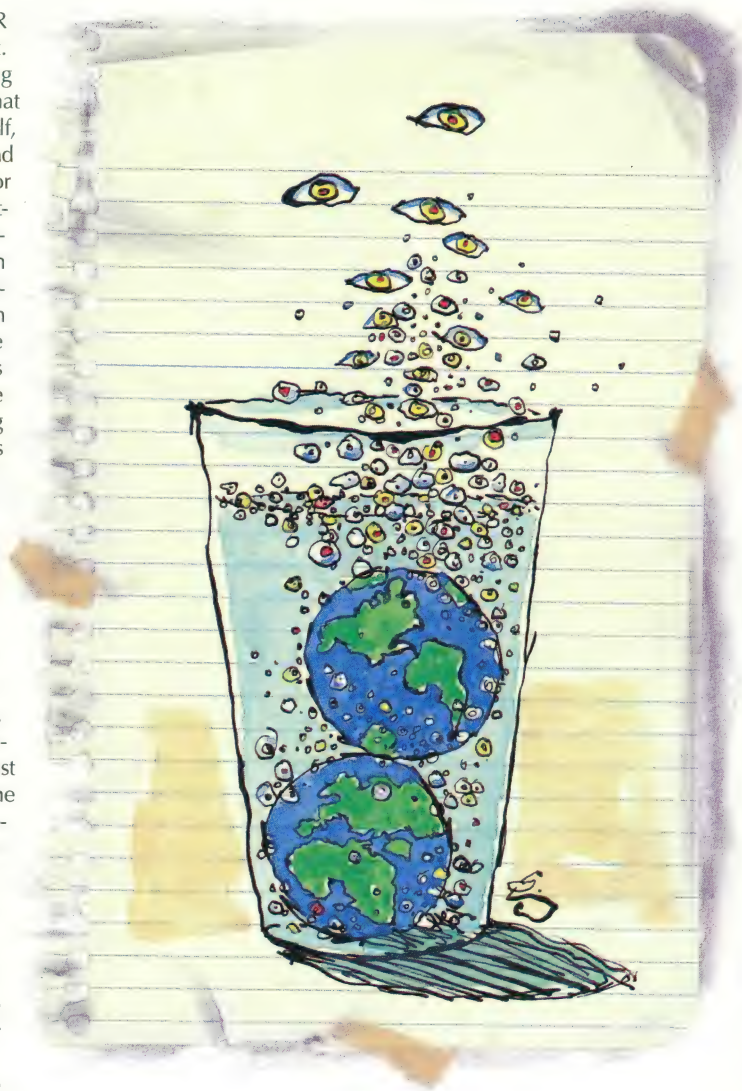
Consider me a cheerleader for the next few months, then. Those heart-songs deserve every chance they can get. I have some tips, observations, anecdotes, and tricks to pass on that might help.

There is only one rule: Forget about being an "artist." Or, at least, forget any of your preconceptions about what an artist is. Whether you love or hate the images in your head that are associated with that term, they are heavy cultural baggage and *will* hold you back. One pole of the spectrum — people who think "artists" are special and different and more gifted than the rest of us — will be held back from trying by their own self-incriminating judgments. The other pole — people who think they already *are* artists, and artists are special and different and more gifted, etc. — will fail because sheer elitist snobbery won't let them break a real creative sweat.

I believe the path to great songwriting lies first in a commitment to song*wright*ing. Wright as in wheelwright, and plowright, and yes, playwright, the one form of writing which has always and unabashedly admitted it is about structure as much as expression. This is a path of humble and enduring craft, not self-proclaimed "art." It's a good path. It will get you to a satisfying place if you devote yourself to it with everything you have to give.

It is highly likely (again, considering where you are reading this) that you have or plan to have some kind of home recording setup. Obviously this can be an invaluable tool to a songwright. There are few bigger boosts to creative music-making in any form than having round-the-clock access to good working tools in a comfortable environment that you aren't paying for by the hour. If you already have a home studio, you know the truth of this. If you are just putting one together, you'll quickly find out. The perfect distance between inspiration and realization is no distance at all, and assuming you have some instrumental chops, then having a home studio almost closes the gap.

Here's the catch. Inspiration is fleeting.



In theory, if you've got a home studio and a musical idea all you have to do is turn on the power and go to it. But theory has this way of glossing over real-world details. By the time you've turned everything in your studio on, set the volume levels, loaded sounds, set programs, adjusted microphones, booted software, and plugged in the gear that you forgot you'd unplugged last session . . . well, that sparkling vision in your head could be getting pretty cloudy. It could even be completely gone. (This assumes that you are working solo. Don't imagine that things are better in a collaborative environment. While songwrighting, each player added to the game increases the possibility of useless chaos almost exponentially.)

Of course, you could just never leave your studio. You could sit there poised to leap on each new idea as it comes along, have your meals delivered, sleep on a cot, and risk only the briefest of expeditions to the bathroom. It sounds like San Quentin with audio cables to me, but never mind that. Even were such an extreme approach practical, it would be awfully limiting in the creative sense. Ideas come from the damndest places; if you want to craft songs that are alive, you've got to go out and actually live.

Which means leaving your studio behind. Doesn't it?

Nope, not necessarily. Not if you do it right.

The first thing to do in figuring out how to open up the border between your recording environment and the rest of the world is to consider your own favorite working method (or methods). When you write a song or try to work out an arrangement for it, what's your approach: Do the words come first for you? The rhythm? The chords? The melody? Is it no one

Connor Freff Cochran is happily busy with a new partnership and new projects, including forays into that strange place called Hollywood. If you are interested in more of his explorations into creativity and life, just write c/o Crossing Point, 47 Lafayette Circle, Suite 180, Lafayette, CA 94549, and ask for a free copy of Connor's Creation *newsletter.*

ILLUSTRATION: COURTNEY GRANNER

CREATIVE OPTIONS

thing, but some mix of all these component parts? Do you normally find your way from first principles *(I'm going to write a song about the decline in the use of Swedish marmosets for stylish evening wraps)*, or do you prefer to work by instinct and happy accident *(You know, this riff sure makes me think of marmosets. . .)*? Once you've thought these matters through, and know your own leanings, you can apply that knowledge productively.

The second thing to do is to keep your mind moving. Literally.

For example, if words are your primary thing as a songwriter, you don't need all that much: A pad, a trusty felt-tip, a day's worth of bus tokens, your own wide-open eyes and ears. Maybe a camera for those visual gestalts that words don't do justice to. But that's it. Load up those things and take a hike. Go crazy. Go walk the streets and fields. Try new experiences and write down your reactions and the reactions of those around you. Drink in the world and spit it out again in words. Watch other people closely: To paraphrase the old TV show, there are a million songs in the naked city, and that guy standing in front of you in the elevator might be the one that goes platinum.

By way of example, here are just three of the many things that inspired songs for me while I was living and walking in New York. (1) In the West Village there is a headshop awning that says, in big letters, EARS PIERCED, and in smaller letters, WITH OR WITHOUT PAIN. (2) Overheard party conversation — "Oh Gawd, him. He's as subtle as a brick in a soufflé." (3) The ancient black drunk who weaved his way down the center of the subway car, loudly announcing to all us passengers with our averted avoid-the-beggar eyes that he was going to show us why he "would be the next sensation of the nation," then shuffled weakly back and forth while he performed a painfully tuneless improvisation from the words on a scrap of newsprint he held in his hand . . . and finally *left the car at the next stop without ever asking anyone for a dime.*

I grant you that such words and scenes are pretty easy to carry home to your studio. But what if it's melodies or rhythms that drive you, either with or without words? The key trick to songwrighting is still to capture them as you go. Since pad and pen are insufficient — you could be the Florence Griffith-Joyner of music notation and still risk missing out on some critical nuance — the answer is to get yourself a good battery-powered pocket recorder. It should be small, light, and durable, with a built-in microphone that is both good and highly directional. There is little in life as annoying as coming back to the studio and finding that those inspired lyrics, concepts, melodies, and beat patterns you came up with are drowned in a sea of tape hiss and background noise. Your recorder should also be reasonably cheap, so you can replace it easily if lost or stolen. Avoid units with voice-activated recording! That's one of those switches that somehow always seems to get thrown by accident just before you want to record some drum part with lots of spaces.

Once equipped with a decent portable tape recorder, your "studio" is with you every moment of the day; all you have to do is use it. If you've never tried it, you might be amazed how complicated a conception you can get down on tape without any instruments at all, using only your voice and hands and feet.

Pack a pad. Take along a tape recorder. Surely, you are saying, these are obvious tricks? Not really. If they were obvious, every real and would-be songwright in the world would carry these useful tools as automatically as car keys and a wallet. Instead most of us tend to rely on our memories, augmented by the occasional blurry note scrawled on palm or napkin. That isn't enough. Palms smear. Napkins get left behind or lost. And human memory is a wonderful but unreliable thing; there's no guessing what will stay logged in it, or why. For every brilliant line or beat that makes it all the way home, there are hundreds, equally wonderful, which wind up lost in the gray matter forever.

On the other hand, just carrying these note-taking tools isn't enough. Neither is making yourself use them. What you have to do is use them with an eye towards using them again in your studio.

That's a crucial distinction. Here are some pointers to make the concept clear:

Don't edit yourself while taking notes. Get it all down, every bit of it, without value judgments; there will be time to get picky later.

Give yourself a context. You won't necessarily remember everything that is relevant, hours later and miles away, especially if you've collected a lot of material in your conceptual fishing trip. So whenever you've finished capturing an idea, any idea, always add some additional notes about what triggered the idea, and why, and how the whole process felt. I got in the habit of noting down exact locations and times of day, so I could return, if necessary, to reconstruct anything that had become shaky in the interim between inspiration and execution.

Give yourself the same cues you like to use when recording. A countoff is a countoff is a countoff; the first time you try to after-the-fact transcribe a rhythm idea without one, you will be sufficiently annoyed at yourself not to repeat the mistake.

Make sure you leave a little working space around your notes. This trick helps with written notes by leaving you room for later impressions and for adding things you forgot to put down in the first place. (Prowl your stationery store for a stenography or accounting pad with a wider left margin than normal.) As for building space into your taped notes, that helps make transcribing and cataloging go easier.

Finally — and most importantly — *don't let your conceptual catch sit on a shelf.* When you come back to your studio after time in the real world, pull out your notes and use them as quickly as you possibly can. It's one thing, having broken the boundaries in search of inspiration, to make sure you don't lose that inspiration's beauty; embalming the poor thing is quite another.

From Stage to Studio, it's Kurzweil's new PC88 Performance Controller. Get the picture?

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OUR 8•BUS REALLY

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Good question. After all, a board's only as good as its users.

So we grabbed the latest stack of 8•Bus Warranty Registration cards and hit the phones.

The names in this ad represent a cross section of current 8•Bus users. They range from platinum supergroups tracking new albums to high school choirs, from bar bands to sound designers working on network TV series and feature films. There'd probably be more names but we didn't want to make the type any smaller than it already is — or keep tying up our already clogged phone system.

As our production of 8•Bus boards increases, so does this list.

In a way, it's confirmation of the raves that magazine reviewers have heaped upon the console. Above all, it's proof that the Mackie 8•Bus is a serious tool for professionals. A tool that's getting used day-in and day-out for major projects.

Call our toll-free literature line 8AM-5PM PST and talk to a genuine Mackoid (no voice mail!). We'll send our obsessively-detailed 24-page color brochure on the 8•Bus Series.

Then become a part of this list by visiting your nearest 8•Bus dealer.

Currently in Spain tracking new album on multiple Mackie 24•8 consoles.
Def Leppard

Sound design & mixing of commercials for G.I. Joe, Kenner Toys, Hasbro Toys, Transformers ½-hour show, infomercials.
Lawrence Wakin • Tapestry Productions Inc. • New York, NY

Tracking for Madonna.
Shep Pettibone • Mastermix Productions Ltd. • New York, NY

Recorded Grammy-Nominated "Sunday Morning" off of the album Millenium on 24•8, currently working on new album exclusively on console. "The 24•8 survived the 7.1 San Fernando Valley earthquake. It's definitely built for rock 'n' roll."
Sheldon Reynolds • Earth Wind & Fire • Los Angeles, CA

Music scoring for Pepsi Cola and McDonalds and Six Flags TV & radio commercials.
The Listening Chair • Dallas, TX

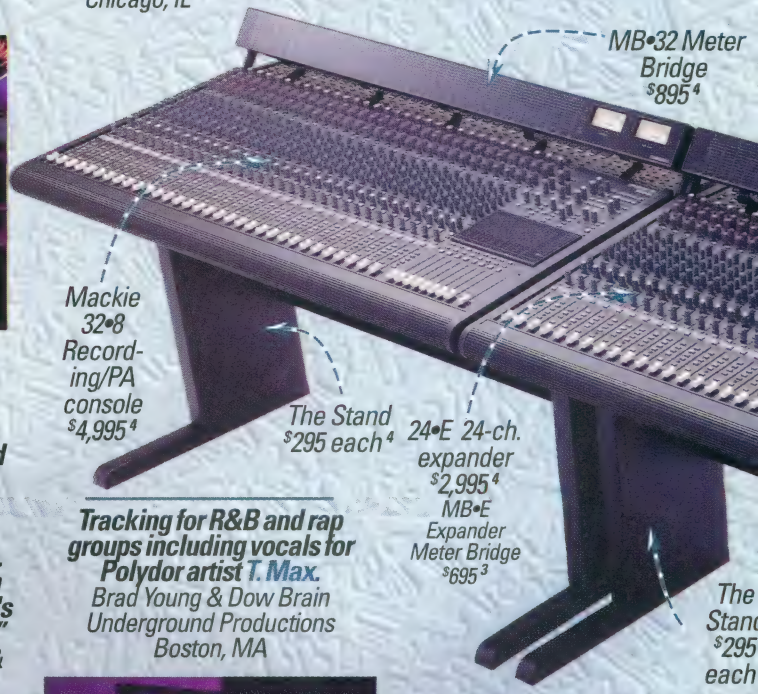
Recording and mixing of acoustic music & sounds from the American West. Recent albums include "Charlie Russell's Old Montana Yarns" by Raphael Cristy and "Where the Red-Winged Blackbirds Sing" by Jim Schulz.
Bruce Anfinson • Last Chance Recordings • Helena, MT

Pizza Hut commercial scored to film, scoring of theme presentation for The BaseBall Network, self-produced album "Rick DePofi and the Mels," currently producing NY Noise's 1st solo artist, Aaron Heick (Chaka Kahn's alto player).
Rick DePofi & Craig Bishop New York Noise • New York, NY

[1] *Former posts include quality assurance with Warner Brothers, Sheffield Labs, Rainbow Records, Chief Mastering Engineer at JVC. Quote: "It's a great board, dude. Buy it!"*

Concert sound reinforcement at the Showcase Theater.
Bob O'Neill, Manager of Entertainment • Six Flags Great Adventure Theme Park • Jackson NJ

Used by students for learning recording and sound design.
The School of The Art Institute of Chicago, Sound Department Chicago, IL



Tracking for R&B and rap groups including vocals for Polydor artist T. Max.
Brad Young & Dow Brain Underground Productions Boston, MA

Dialog editing for Untouchables, TV series and Movies of the Week. "I work out of my home now. It's quite an achievement to be able to get a higher sound quality than most of the other sound houses in town."
3-time Emmy winner David Scharf Helix Sound • Los Angeles, CA

Wide range of multimedia projects including major motion pictures (the names of which can't be divulged).
John Acoca[1] • Oracular Multimedia San Francisco, CA

Jazz choir sound reinforcement and recording.
Dwayne Pedigo • Plano East Senior High School • Plano, TX

Sound effects, music and voice for Atari arcade games.
Brad Fuller • Atari Games Corporation • Milpitas, CA

Albums for alternative groups Twenty-Two Brides and The Cucumbers, demo for Freedomland.
John Williams • Ground Zero Studios • New York, NY

"Praise Songs" contemporary Christian album/CD, "Body Builders" children's album/CD.
Peter Episcopo • Bridge Song Media • Old Bridge NJ

Sound design for Pepsi Cola TV spot aired during last January mondo-bowl.
Hans ten Broeke[2] • Buzz, Inc. New York, NY

Sound reinforcement for theater presentations and concerts in a 300-seat theater.
Centre Culturel Franco - Manitobain • Winnipeg, MB, Canada

[2] *Quote: "It's the only analog component in my room. You hardly know it's there, it's so transparent."*

CONSOLES WORK.

In studios...in clubs...in video and film production facilities... on the road: A sample of what satisfied 32•8, 24•8 and 16•8 owners are doing with their consoles (as of late April, 1994).

Frank Serafine, feature movie sound designer/SFX wizard in the Foley Room at his Venice, CA production complex.

Scoring for two Fox Televison NFL promos, theme & scoring for PBS children's series Storytime, song demos & album tracking, TV commercials, infomercials & demos.
John E. Nordstrom II
Love Den Productions
Pacific Palisades, CA

Album/CD tracking and mixing for the groups Mean Solar Day and Product.
Ramsey Gouda • Union Head Studio of Chicago • Chicago, IL

Worship service and in-house concert sound reinforcement, recording of sermons.
New Life Assembly of God
Lancaster, PA

Sound reinforcement in a live blues club showcasing live, regional & national acts such as Savoy Brown, Jr. Wells, etc.
Manny's Car Wash
New York, NY

Rental for film mixing projects and home studios. "We love them because we never see them. They're great for our business."
Chris Dunn • Dreamhire
New York, NY

[4] Suggested retail price. Slightly higher in Canada.

Skittles TV commercial, demo for new artist Nita Whitaker, original music for Terpsicorps modern dance company.
Lincoln Adler
Are We Famous Yet? Productions
Los Angeles, CA

DNA sampling CD with mega-drummer Bernard Purdie (3000+ album credits)!
Frank Heller[3] • Weasel Boy Recording • Brooklyn, NY

[3] Quote: "This job had extremely unusual and demanding monitoring & effects require-ments. I honestly couldn't have done it without the 32•8."

OTHER PROFESSIONALS WHO OWN AND USE MACKIE DESIGNS 8•BUS CONSOLES*

Dave Abbruzzese, drummer for Pearl Jam

Slash, guitarist/songwriter, Guns 'N Roses

Steve Brown, guitarist/producer for Trixter

Natalie Cole, solo artist

Greg Droman, Grammy-nominated engineer for Linsey Buckingham

Gregg Field, drummer for Frank Sinatra

Michael Frondelli, Engineer-Producer (Eric Johnson, Crowded House, etc.), Creative Director for Capitol Records

Bill Gould, bassist for Faith No More

Bashiri Johnson, percussionist for Whitney Houston, Madonna

Mick Jones, producer for Van Halen, guitarist for Foreigner

Art Neville, producer, The Meters, keyboardist, Neville Bros.

David Frangioni, MIDI specialist/Engineer Aerosmith, Elton John, and Extreme

Danny Kortchmar, producer for James Taylor, Billy Joel, Rod Stewart

Bruce Kulick, guitarist for Kiss

Kyle Lenning, President Asylum Records, Nashville

Clair Marlo, Artist, Producer

Queensryche

Dave "Snake" Sabo, guitarist for Skid Row

Ben Sidran, producer

Leo Sidran, songwriter for Steve Miller

Steven Tyler, singer for Aerosmith

*Mention in this list is intended to indicate ownership only and does not in any way denote official endorsement.

Producer Ricky Peterson's Pre/Post Production Room with Mackie Designs 24•8 at Paisley Park.

R&B radio remix of Boz Scaggs' "I'll Be The One" for Virgin Records, recording solo album for the Japanese Go Jazz label.
Ricky Peterson, producer, Paisley Park
Minneapolis, MN

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RECORDINGS

"Body and Soul," Mulgrew Miller & Julian Joseph.
As Andy LaVerne noted in last month's *Keyboard*, standard tunes offer insight into an artist's creative process. The case is made on two versions of "Body and Soul," played by two outstanding young jazz pianists. On his new album, *With Our Own Eyes* (Novus/RCA), Miller sticks close to the structure and mood of the song, but builds tension through extended bitonal passages and one significant rewrite: The chords in the last eight bars of each verse begin on the tonic (as composed, this section starts on the IIm) and follow a descending sequence of minor thirds in the bass. The trio setting leaves room to ruminate, but the absence of a horn, coupled with Miller's reluctance to refer to the melody, creates an impression of artful yet unsatisfying variations in search of a theme. Julian Joseph works differently on his second CD, *Reality* (Atlantic Jazz): The theme is clearly articulated by saxophonist Jean Toussaint, with the chromatic line in the fourth bar emphasized by the addition of an extra measure. This lets Joseph concentrate on harmonic extension in the background; when he takes his solo, a slow-motion swing feel propels him through points of tension and release, including a quick upward smear. Though you can read too much into this sort of thing, "Body and Soul" seems to expose Joseph as a player of dramatic gesture, while Miller works at a more cerebral level of harmonic exploration. Original compositions, well played, fill out the rest of each album, but this one shared title is the best yardstick by which to measure the two pianists' comparative strengths.

Rick Wakeman, *The Official Bootleg* (Griffin Music, Box 664, Lombard, IL 60148).
In fact, this is a Wake*men* double CD, featuring the live synth histrionics of Rick and his son Adam. On disc, at least, it's hard to tell 'em apart. As bassist Alan Thomson and drummer Tony Fernandez mark time in the background, Wakeman *per et fils* apparently toss solos back and forth in that nimble, cleanly-articulated style that Dad trademarked years ago. Clearly, they're cut from the same fine cloth. But even a few hard-core Wakemanites may find themselves asking, an hour so into the action, whether a double dose is more potent than a single shot. There's a lot of classic repertoire here, and by the time we weathered *The Myths and Legends of King Arthur & the Knights of the Round Table* and had waded deep into *Journey to the Centre of the Earth*, the wisdom of the old saw "less is more" was beginning to sink in. For all his talent and importance, Wakeman can be an exhausting player. On *Journey*, the sixteenth-note runs and triplets never seem to stop; through chord and textural changes, they dash on and on and on. There's hardly any pitch-bend or modulation or syncopation; even rests are scarce. Sustained by an admirable endurance, Rick and Adam seem to have mastered the art of soloing forever with practically no reference to a theme. This can work in smaller forms — over a verse or two, for example. But this sort of marathon taxes the ears, crosses the eyes, and tests one's tolerance for the excesses of prog.

Harold Budd, *She Is a Phantom* (New Albion, 584 Castro #515, San Francisco, CA 94114).
The sound of one note is often all you need to tell who the guitar player is: Clapton, Harrison, Beck, that annoying kid in the garage down the street. It's trickier with pianists, whose instruments can't be so easily personalized. Budd is one of the few who has his own sound — a hushed, spectral timbre, shrouded in reverb and played from somewhere far away. In these 18 short pieces, a variety of contexts brings out an even greater luminescence by bathing this sound in unusual lights. Budd's piano shares space here with the Zeitgeist quartet. A semi-unison clarinet and glockenspiel line on "Handsome . . ." floats over spare synth bits, while Budd plays dark quarter-note chords in the background; together, the artists achieve more of a three-dimensional effect than Budd sometimes does on his own projects. The moody titles ("Emboldened/my dreams perish," "I blink and she's gone," "She's by the window," "And then I alone am alone") mirror the wistful, ambient, occasionally minimalist, vaguely ecclesiastical aspects of the music. It's a formula that Zeitgeist understands; their contributions illuminate rather than obscure this aesthetic. Picture a portrait, faded by time, in an old gilded frame. Behind drawn drapes, thunderclouds darken the horizon. That's *Phantom*.

Dave Brubeck, Roland Hanna, Dick Hyman, *Jazz Sonatas* (Angel).
On this collection of classical pieces written by three noted jazz pianists, Hyman alone reflects a compositional skill that's somewhere in the realm of his gifts as a player. His *Sonata* and *The Minotaur*, both written for violin and piano, integrate sophisticated melodies into dynamic linear structures; especially in the improvisational passages of *The Minotaur*, he juggles elements of jazz, chamber accompaniment, and even klezmer, as if such cross-breeding was a hallmark of Western musical discipline. Alas, the rest of these *Sonatas* belie this notion. Brubeck's *Quintet Sonata* is a well-crafted but wearying exercise, whose repetitive 6/8 motifs for more than 11 minutes induce a king of sing-songey stupor. Hanna's *Sonata for Chamber Trio and Jazz Piano* is encumbered by trivial thematic material and an ungraceful orchestration, unredeemed by the composer's own spirited performance; some passages, such as the aimless call-and-response between French horn and cello in the "Andante Con Moto" movement, seem drawn from the Peter Schickele book of idiomatic satire. Hanna does shine in *Impromptu*, an extemporized duo with Hyman, but this only proves that skill in one discipline doesn't necessarily guarantee success in another.

Various Artists, *Asian Games* (Verve Forecast). Ryuichi Sakamoto, Fairlight colorist Nicky Skopelitis, Bill Laswell, and percussionist Aïyb Dieng lay down the groove as adventurous pianist Yosuke Yamashita adds jazz to the culture-jumping mix. A collective approach puts a cap on solo fireworks but leaves the end product oddly unfocused.

Keiko Matsui, *Doll* (Unity, 1541 Ocean Ave., Ste. 200, Santa Monica, CA 90401). As on her previous releases, Matsui slips into derivative moments here and there. Still, her solos are solid, her synth work clean. Even while copping a Weather Report groove on the title track, she digs in with authoritative licks that threaten to knock the song out of MOR and into jazz territory. *Doll* is her strongest album yet.

Susumu Yokota, *The Frankfurt-Tokyo Connection* (Planet Earth, 6634 Sunset Blvd., Hollywood, CA 90028). A merciless exercise in dance groove overkill. The dental-drill synth textures preclude trancing out, the sequenced rhythms break no new ground, melodies are virtually nonexistent, musical substance is vaporous as white noise. An inviting target for those whose game involves dissing modern electronic music.

Danny Gatton & Joey De Francesco, *Relentless* (Big Mo, RR1, Box 389C, Norwich, VT 09055). "Well You Needn't" with a rockabilly head? That's only one weird product of this pairing. Gatton's guitar lights a fire under De Francesco, who digs out deeper blues than we've heard on some of his own releases. Joey's blazing style burns even hotter when he's bouncing fours back and forth with a player of Gatton's intensity.

Swamp Terrorists, *Combat Shock* (Sub/Mission, dist. by Cargo Records, 4901-906 Morena Blvd., San Diego, CA 92117-3432). Behind vocalist Ane H.'s snarling and gargling, STR kicks nasty but imaginative sequences. Power guitar samples dominate, but the occasional horn stab, light drum hit, or even shuffle beat adds an element of unpredictability to the din.

Beastie Boys, *Ill Communication* (Capitol). Maybe we're regressing, but the Beasties sound like they're onto something. Their gloriously sloppy jams, greased with B-3 smears, provide the link between hip-hop and vintage garage band rock. And where too many jazzers use samples to establish street credibility, these guys are still telling stories with their sounds. Great stuff, guys. (Message to Al Kooper: Check out "Flute Loop.")

Emiliano Salvador, *Ayer Y Hoy* (QBADISC, Box 1256, Old Chelsea Stn., New York, NY 10011). Salvador was a pillar in Cuba's jazz piano community until his death two years ago. Here, he plays mainly in quartet settings but impresses most on his own, with lines that sing over peppery chord stabs and waft over turbulent tremolos. His dynamic intensity gives us perspective on the genesis of Gonzalo Rubalcaba.

Various Artists, *L.A. Hardcore, Vol. 1* (VRG, Box 46750, Hollywood, CA 90046). SoCal likes its techno light on the bass and seasoned with wry media samples. Many hot spots, including the burnin' rhythm fills on Xpando's "Panties" and R.D. 2000's "Acid Core," Axiomatic's frenetic bass drum patterns in "Axiomatic," the infectious vocal sample motif over swing beats on "Dominate the Rhythm" by Beatmistress, and the astonishing momentum of Mindbender's "Burning Out."

Pulp, *His 'n' Hers* (Island). We can't tell whether Candida Doyle is capable of playing anything more complex than triads or faster than quarter-notes with this retro new wave quintet. But her taste for timbres on Farfisa, Wurlitzer, Clav, Korg Trident II, and other dusty axes is nothing short of thrilling. An ear orgy for vintage fans.

Sincronia, *Odisea del Tiempo Eterno* (Opcion Sonica, dist. by Eurock, Box 13718, Portland, OR 97213). Despite the rough edges, infusions of indigenous music and a willingness to tackle large forms give this Mexican prog trio an intriguing flavor. José Luis Guzmán, David Miller, and Simón Medina split the synth — largely analog, of course — parts.

Gary McAvoy, *Martian Oasis* (Atom Music, Box 446, Kaleden, B.C., Canada V0H 1K0). Homebrew space music, with all the essentials: floaty synth triads, mechanistic rhythm sequences, disembodied vocal samples. Though McAvoy never challenges the listener, his cool timbres and tight arrangements should satisfy most fans of stellar synthesis.

Stakka Bo, *Supermarket* (Polydor). Swedish hip-hop? Why not? Jonas von der Burg and Stakka Bo scatter clever samples — Attention! "Louie Louie" sighting! — over medium-tempo drum tracks, with live piano and Rhodes fills adding a tasty jazz touch. But don't look for incendiary beats: Judging by *Supermarket*, the streets of Stockholm are more mellow than mean.

BOOKS

***A Life in the Arts*, by Eric Maisel, Ph.D.** (Tarcher/Putnam, 245 pages paperback, $15.95). Being an artist is never simple. Sometimes you need inspiration or encouragement; sometimes you just need somebody who can help make sense of what's going on in your head. Julia Cameron's *The Artist's Way* has a lot to offer. If you're serious about making progress as a real artist, though, pick up a copy of *A Life in the Arts*. This book has the hardcore issues nailed.

Maisel is a writer of fiction and also a psychologist who specializes in treating artists (blocked, depressed, anxiety-ridden, confused, maybe even crazy). He talks about the real quandaries an artist faces — self-doubt vs. arrogance, taking care of business, obscurity and stardom, isolation vs. community involvement. The discussion is aimed equally at artists in all fields, and is peppered with concrete psychological exercises. Keeping a journal or workbook while you read would not be amiss. Our only complaint is the sexist language; for Maisel, the artist is almost always "he."

Pithy quotes from famous artists decorate the margins. Picasso, Chopin, Dostoevsky, Andy Warhol, Buddy Rich, they're all here, bearing witness to the accuracy of Maisel's insights. But the best thing about *A Life in the Arts* is that it isn't a sugar-coated, feel-good, power-of-positive-thinking manual. Maisel tackles the thorny difficulties of his subject head-on. He's also delightfully nonjudgmental: He encourages the reader to ask tough questions, but frames the questions in a way that doesn't force any particular set of answers.

Straight talk like this doesn't come along often. If you're happy with your present gig, and if you're never blocked, and if you're making all the money you'd like to as an artist, then maybe the book has nothing to offer you. Not in that category? Then do yourself a big favor, and grab a copy. Study it. Live it. Your art is worth the effort.

—Jim Aikin

Great Sound Ru

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E-MU

It's as catchy as a cold, and stocked with more hooks than a block and tackle shop. But it ain't simple: The music of Vince Clarke, all points and pops behind

ELECTRO-LUDDITE

vince clark

OF ERASURE

BY ROBERT L. DOERSCHUK

the seraphic vocals of Andy Bell in Erasure, is riddled with contradiction. Pinprick sequences spin; textures are all quick jabs, pad-free. Yet somehow it flows like mercury, cool and smooth. Chords are solid, the bass always locked to the root, but textures shimmer; listening to Erasure is like watching Gibraltar,

PHOTOGRAPHY: ADRIAN GREEN/RETNA LTD.

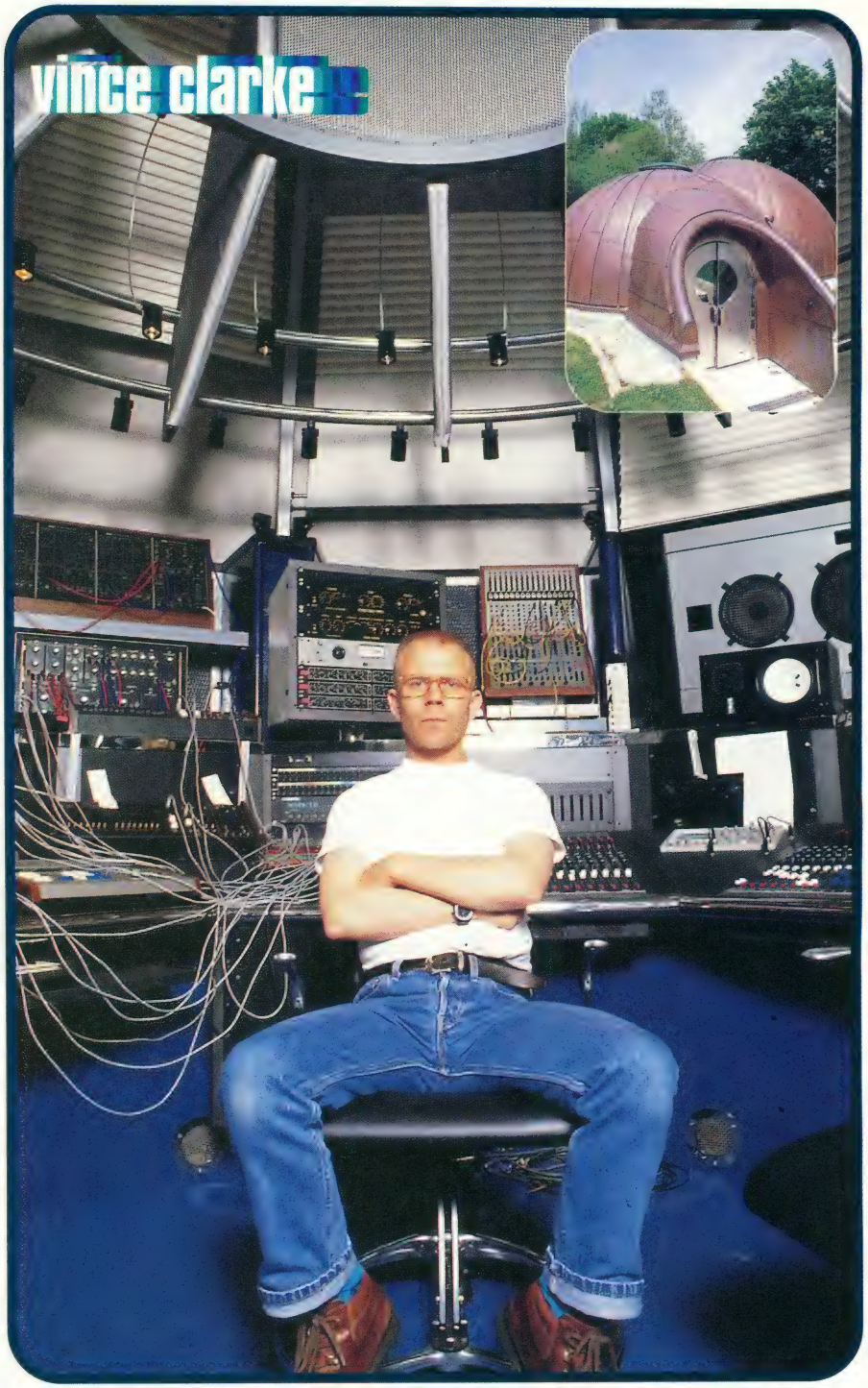
showered in tinsel, sparkle in sunlight.

The enigma of Erasure is especially evident on the duo's latest smash album. *I Say, I Say, I Say* is their purest product to date, with nothing but voice and analog synths; no samples, no FM. On the other hand, there's no acoustic instrumentation, and practically no real-time playing. You won't find a more electronic album or a cleaner production on the charts, but the sound harks back to Human League, OMD, and early Depeche Mode, Clarke's original band. Is it modern rock? Or nostalgia for the stone age of synth rock?

And what of Clarke himself? Face-to-face, he's an amiable guy. Short red hair, two gold earrings, orange tortoise-shell specs. Warm, slightly cockeyed smile. Quick and ironic wit. As with his music, something solid lies beneath a glittery veneer. He has no problem demonstrating his primitive chops with graceless, stiff-fingered pokes. He also knows what he likes, and holds nothing back in expressing his beliefs.

Here, again, we have contradictions: Clarke is an analog purist who has serious problems with the vintage synth revival. He's a painstaking perfectionist, capable of lingering over note after note in his step-input sequences. Yet he describes his approach as improvisational, based in large degree on mystery and what might be described as a kind of voluntary ignorance. More even than the sound, the *process* of analog synthesis appeals to him — the knob twiddles, the exploration, the alchemy.

From its genesis in the '70s, synth rock has evolved toward dark horizons. The path from Kraftwerk to techno has few detours or interruptions; the quest for precision, the purge of human clutter and the triumph of the computer groove, has created a consensus that alienation is the most, perhaps the only, appropriate emotion to cultivate in sequence-based, dance-oriented music. Clarke is one of the very few artists to challenge that notion. In fact, he's been defying it for nearly 14 years, since the release of *Speak and Spell*. That album established Depeche Mode as masters of cheery, upbeat electro-pop before the band parted ways with Clarke to join the rest of the synth-rock herd in its gloom-bound trudge.



The outside of Vince Clarke's studio suggests either an alien landing or a eco-friendly, earth-toned hut somewhere beyond the bustle of London (upper R). But inside, all is state-of-the-art music tech — c. 1984. Clarke's analog-age gear includes an ARP sequencer near his right elbow, a Roland System 100M overhead, a KMX-16 MIDI patcher peeking over his right shoulder, and an upside-down Serge modular unit to the right of his head.

After leaving Depeche Mode, Clarke recorded several highly regarded albums with Alison "Alf" Moyet as Yazoo, released a British hit single, "Never Never," in a project called the Assembly, and eventually found himself auditioning singers for what turned out to be Erasure. Andy Bell got the call; his voice, a kind of Brit echo of Aaron Neville, perfectly complemented Clarke's staccato sensibility. Their first album, *Wonderland*, established the formula in 1986: crisp, percolating arpeggios swirling around choir boy vocals, undergirded by the mean stomp of synthesized drums.

Other albums and several dance club hits followed, but by the late '80s Clarke and Bell were making their biggest waves onstage. Even Depeche Mode couldn't match their impact: They sold out Madison Square Garden in two hours, drew 50,000 fans to the Milton Keynes Bowl, played 15 consecutive nights at both the Manchester Apollo and the Hammersmith Odeon. Fifty thousand spectators gathered one night in Buenos Aires to watch an Erasure

video. This was Springsteen/M. Jackson territory — pretty heady stuff for a band that didn't even have a guitar player.

Their last tour, an overwhelming spectacle called Phantasmagorical Entertainment, employed dozens of dancers, costume designers, and stagehands, and left the duo completely exhausted. That was in 1992; today, while there is vague talk of another road show in '95, the subject still induces weary apprehension in Clarke's eyes. More pressing, at this point, is the music: He and Bell are about to begin work on another album, with plans to make it their second release of this year. Ex-Human Leaguer Martyn Ware, who produced *I Say, I Say, I Say*, seems to have the inside track for this project as well. But no matter who's at the console, Clarke will once more fan the creative flame and keep the analog banner clean.

• • •

What distinguishes I Say, I Say, I Say *from previous Erasure albums?*

music around his singing. We went to Dublin for a few weeks; he did all the vocals there. Then we came back to London to do the music.

What kinds of demos did you do?

We just had a piano, with Andy singing.

With some sort of rhythm?

No, no rhythm. We never put a style into the demo. What we usually do, kind of deliberately, is record them as crappily as possible. And it's always on a microcassette. We've only got one. We've demoed five albums on this thing, over and over. That's important for us, because when we're writing, we try to make the song as good as possible. That's it.

The guitar mentality is quite different from the keyboard mentality: You hit the notes differently, you play different kinds of chords. Is there much of your previous life as a guitar player left in the way you create music on synths?

I switch between the two modes. When

BBC Micro computer. The software for it is UMI, which doesn't exist anymore. The guy wrote the program in his bedroom; it's very much a home thing. Once I've got the arrangement going and all the sounds happening, I transfer the information in real time, one monophonic line at a time, into a Roland MC-4. I'll do that through a Roland MPU-101, and then we'll record from the MC-4.

You've used that method for quite some time.

Right. It used to be a pain in the ass, because then you'd have to program the MC-4s. It's a nightmare: The display is only this big, and it only shows one thing — the note, the gate, the step, or something. It takes forever. But now I'll get the arrangement up in a MIDI sequencer, the UMI, and I'll use the MC-4 just to record with.

You've stayed with the BBC platform as well.

They're not made anymore either. The

"I like music that sounds like clockwork. I prefer my music coming from the moon."

It has a particular kind of purity because we did all the vocals first. The music came last. We recorded with a very basic track, just the chord arrangement, on tape, to which Andy did all his harmonies and lead vocals. Then I put the music around the singing. Normally, it's the other way around.

Was the songwriting process different as well?

No. We always write together acoustically.

Why did you reverse the recording routine?

Really, just to see what would happen. I suppose we had the idea that it might be a more vocal-oriented album. We had all these grand ideas about using Andy's voice to do rhythms and stuff, because we don't use samplers. But that didn't work out.

He really holds onto the melody on this album, as if he wasn't being distracted by or interacting with your parts.

That's right. I think he has a hard time sometimes because he listens to the track when we do that first, but he's not really listening to the music. He'll have a harmony idea or a counter-melody idea that will be so strong in his head that it won't matter if it's some synth music or if there's a funny noise in the middle of it; he'll just do it over the top of it. That causes problems sometimes, and we have to take out a piece of music. This way around, I could just put the

I'm writing songs, all I'm thinking about is chord structures: What sounds nice with the melody in the background of the song? Sometimes, when I'm sequencing in the studio, I'll try and imagine what a guitar might play — not necessarily the sounds or the bad timing, but the harmonic and rhythmic parts. I'm a terrible guitarist, by the way.

There are some guitar-like figures on this album.

I can do that. If I arpeggiate a song in, like, eighth-notes, then I'll arpeggiate it how I'd pick a guitar.

Do you play those parts on guitar?

No. Everything I do is step-time.

Not too many people work that way anymore.

Well, I use very old-fashioned sequencers. When it comes to the arrangement and getting the track out, I'll use this

BBC was actually developed for people in schools to learn very simple software writing.

Why haven't you made the leap to a more widely used computer?

Well, I started out using MC-4s. Then MIDI sequencers came out with the Yamaha QX1, but they were so expensive. UMI was the first MIDI sequencer that had a screen: You could see more than one piece of information at a time.

Was it a black-and-white screen?

It was then, but then it developed. The guy updates the software all the time. Then Atari came out, and it wiped him off the map. He still does it for me, though. I can't do Ataris. I can't take them seriously. I can't!

What do you like about the UMI program?

It's like a drum machine sequencer. You work with your hands. I can't get my mind around tape recorder sequencers like Cubase.

VINCE CLARKE	A SELECTED DISCOGRAPHY
WITH DEPECHE MODE	*Speak and Spell*, Sire.
WITH ERASURE	*Chorus*, Sire/Reprise. *Circus*, Sire. *Crackers International*, Sire/Reprise. *I Say, I Say, I Say*, Mute/Elektra. *The Innocents*, Sire. *Two-Ring Circus*, Sire. *Wild!*, Sire. *Wonderland*, Sire.
WITH YAZOO	*Upstairs at Eric's*, Sire. *You and Me Both*, Sire.

vince clarke

I don't get it.

Is the support there if your system crashes?

Yeah, because the guy still does things for me. He doesn't do it to make a living anymore, but I can get him to write software for me. It's essentially like a cheap little computer. I used to use UMI for everything, but I use the MC-4 now to actually record with. And I use a custom-built, six-channel ARP sequencer. I've got a few ARPs.

How do you feel about the vintage keyboard phenomenon?

Well, everybody's cashing in on analog now. It's funny. People might say that an analog synthesizer is better than a modern synthesizer because it's got a classic sound. But I don't think that's the point. The point in using something like a Serge Modular system is that you've got so many knobs to twiddle around with and change. There are no rules, no preset modulations. You can do anything you like with it, and you never know what's going to come out at the end. So people miss out on the joys of doing that if they use one of those Vintage Keys things.

The process is the point, even more than the sound.

It is for me.

Yet you've got a sampling CD out on the market.

Well, I'm not really up for sampling, but this kid phoned me up with the idea of putting out a collection of my analog sounds. He was so enthusiastic! He could have been a car salesman, he was that convincing. He had his own tiny company called IMG; he makes these things in his bedroom. So he came to my studio in Amsterdam, and we spent two days with someone else who operated a DAT machine. I just messed about, running sequences and changing the sounds, and they recorded the bits they liked. The only problem was that we had to get 500 sounds. After a while, they all started sounding the same to me [*laughs*]. But I did it because this bloke was so funny. He's such a sweet little lad. I was thinking of doing another one of funny sounds. There's nothing more satisfying than making a synthesizer sound like a fart.

What's the best synth for funny sounds?

[*Instant response.*] ARP 2600.

But now these sounds are going to wind up in people's samplers, untweaked. You're just contributing to the problem you've diagnosed in modern synthesis.

[*Bemused shrug.*] Yeah, well, you know.

Most synth bands that base their music largely on sequences and dance beats seem to create an industrial or angst-ridden feel. But you use these same devices to create a warmer, more romantic feeling, without resorting to new agey pads or clichés. How do you humanize these devices?

I think it comes down to not thinking about it. That's what makes it work. I approach music very simply because, first of all, I can't play very well. So I don't overcomplicate things. And using things like ARP sequencers is a random process. Also, instead of using block chords, I do lots of interweaving lines from synthesizers. That's more interesting, and things turn out more melodic that way.

"I can't stand MIDI. It's so out of time. It gives you a constantly sloshy sound. It's crap."

That arpeggiation combines the static effect of the chords with a kind of shimmering dynamic sense. The key, in this approach, is to work with the details of each sequence.

Absolutely. You look at every single note and every single sound. That's really important. You're not dealing with a line that just fills the song. You're not looking at a stereo pad that is the bulk of the song. I don't even like the word "pad." In the studio we have a swear system: There are certain words you can't say, otherwise you pay a 50 pence fine. "Pad" is one of them.

What else?

You can't say "MIDI." You can't say "digital." You can't say "SSL." You can say them outside the studio, not inside.

How about "touch-sensitive"?

I don't use it, so that wouldn't come up.

"Polyphonic"?

That's okay.

"Sampling"?

That's very bad. We also have the mystery word of the day: That would be worth a pound. There's always three of us in the studio. If one of us is late, he misses out on the mystery word, which would be written on a piece of paper but turned the wrong way around. We'd just add up how many times he'd say it, then present a bill to him at the end of the day.

Apparently traditional keyboard parts never appealed to you.

I could never do that, even if I wanted to. My synthesizer background is doing this [*Clarke jabs alternating notes an octave apart, using two stiff forefingers*] with Depeche Mode, since it was all monophonic anyway. It's never gotten much better than that.

What is your keyboard of choice for playing those sorts of parts?

I don't actually play keyboards at all anymore. Everything is sequenced. My favorite synthesizers change all the time. Every synthesizer in my studio is analog. There's a few FM things downstairs in the junk room. I never understood FM programming anyway. It's the same with samplers: Someone comes along with their sample disc, and it's like, "Gimme that," and you try to find a sound that fits: bass drums, snare drums, or whatever. It's so boring! I've tried to program new synths, but you spend half an hour trying to doctor a sound and make it interesting. Then, when you do the comparison, the sound that the guy in Japan came up with is a hundred times better. So there's no pleasure in it. Then, of course, if I'm using their sounds, so are a hundred other people. So I've gotten rid of everything, and I've been buying up all of America's analog synthesizers. I only buy them here.

They're too expensive in the U.K.?

You just can't get them there. I've become a mad collector of stuff. Things keep cropping up all the time. The last thing I got was a Buchla system, with about 16 modules in the cabinet. It's very old and knackered. But I'm getting it fixed. They look great in the studio as well.

Some of the vocal parts on this album sound like samples.

[*Firmly.*] There are no samples. We used a choir on two tracks. When we were in Dublin, we went to a cathedral and recorded their choir in stereo. They were the real thing.

On "So the Story Goes," the choir seems to go out of tune toward the end.

That was our wanky producer's idea. He said, "Wouldn't it be great if they went out of key on this?" And we said, "Well, I'm not interested in vocals anyway, so whatever you

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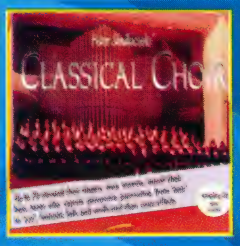

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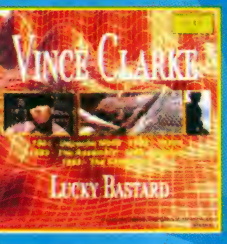

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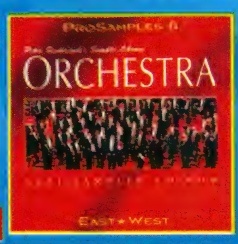

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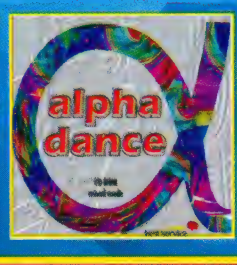

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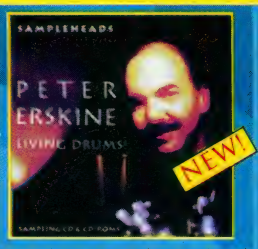

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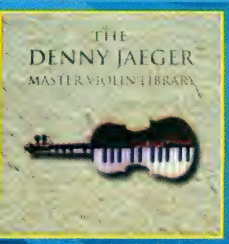

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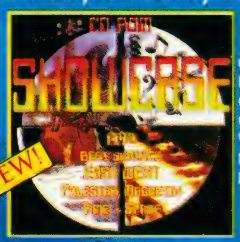

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want" [*laughs*].

What kind of impact did your producer, Martyn Ware, have?

He's a very enthusiastic producer. He hadn't made a synthesizer record for 15 years or something; I suppose the last one was with Heaven 17, but even they weren't really doing synthesizer music at the end. Before that, he was in the Human League, which was real synthesizer music — *Travelogue* and *Reproduction* [Virgin, both out of print]. So his enthusiasm spilled over into the album. He was open; he wasn't trying to make us into anything we weren't. Just let us get on with it. I mean, he was still in control, because if we were left to our own devices, the record would never finish.

What did you use for drum sounds on the album?

It's all modular systems. I don't have to rely on anybody's samples; I get my own drum sounds.

There are practically no acoustically resonant drum sounds in your work.

I like drum sounds that sound like synthesizers. I like music that sounds like clockwork. I prefer my music coming from the moon.

A good example of that clockwork approach is in "Because You're So Sweet." Why did you add a few extra bars of what sounds like a wound-up mechanical clock in the midst of this romantic ballad?

You know how a real band plays when they put a little pause after a drum fill? I'm not really a muso [*i.e.*, musician], so I don't really know what the expression is, but it's kind of a tension thing. We just decided that it would be nice to have something like that at this point of the song, but doing it electronically is a pain in the ass. If you do one or two bars with the synchronizer, you've got to change the tempo. This was literally the sequence slowing down, going from tempo 108 to 80.

There's an eight-bar percussion break in "Blues Away" that features at least some suggestions of acoustical resonance, in a kind of industrial style.

Again, it was me just messing about. I usually work in the studio on my own to get things going before the producer comes in. At that point in the song, I just triggered the ARP sequencers to kick off. I had two ARP sequencers running, and I was using white noise and pink noise to modulate filters.

Andy's very human vocals apparently balance out that approach. Do you ever want to do a solo project that goes further toward the style you're describing?

Not really. I mean, we work solo together. The way that we balance off of each other is a real pleasure. And it's nice when you've got someone else there saying, "Yeah, that's a really interesting sound." It would be very difficult for me to do it on my own.

How do your arrangements evolve from the acoustic demos? Let's use "Miracle" as an example.

Well, all the tracks on this album are better arranged than anything we've ever done. Once the songs were written and demoed on the piano, we did the rough arrangement in Amsterdam; that was with the producer. Usually, when we write a song, we've got three or four melodic parts, each one four or eight bars long. We just join the pieces together: "That could be the chorus. That could be the bridge. Is that repeatable or not? That bit can only be used once." Then, when we have the vocals recorded, it comes time to do the music for real. Now, there's a thin whiny sound that goes all the way through "Miracle." I think it's a Roland

MS-20 that arpeggiates the basic chords.

The interlocking sequences are an Erasure trademark.

That's not being done much in arrangements anymore, and I think that's because the limitation is that it has to be a dance track: The drums have to be in from the very beginning, all the time. That's a real shame. We never set out to make this album a dance record. They're just songs, so we could do whatever we pleased with the arrangements.

Is the backbeat emphasized too much in modern synthesizer rock?

It's just the type of music that's being done. People who make dance music aren't writing songs. It's not about classic songs that will be covered in 50 years; they're just dance tracks. So I suppose it has to be that way for them.

Were you interested in techno when it came out?

I really don't know anything about it. I'm completely ignorant.

It seems to have established itself so quickly that a set of clichés is already restricting much of its development.

Yeah. You get a production team, and they'll always use the same riff from the same record in every song that they remix. I've cut away from that. We have remixes done of our tracks, and I don't listen to them. It's not something that interests me. I like to go to clubs, but not *that* much.

What about ambient techno?

I quite like some ambient music when I hear it, although I don't know what I'm listening to. I did just rebuy [Brian Eno's] *Music for Airports.*

Did the idea of found sounds in the form of samples ever appeal to you as an arrangement device?

No. Again, by that time I was bored with those multi-purpose buttons that you have on samplers. I was fed up with trying to find the right thing on the right menu and all that crap. Used to piss me off.

You have used drum samples before — for example, on your cover of "River Deep, Mountain High," from The Innocents.

But things have evolved over the past two or three albums. We've moved away from that. This album is pure synth.

You've abandoned other elements that appeared on earlier albums. There were piano sounds, for example, on The Innocents.

It's actually an acoustic guitar on a couple of tracks.

"Take Me Back" does have an organ-like sound in the three-chord structural figure. Or does it sound that way to you?

I don't know! I never intentionally program keyboards to sound like anything. I'm just tweaking 'em until I get the right dryness or the right dullness or whatever — until it fits in. I would shy away from saying, "What we need here is a brass-type sound."

Your bass part is almost always on the root of the chord. Only on the chorus in "Miracle" does it climb up to the 3rd of one chord.

I don't know what else to do [*laughs*]!

Why did you go up to that 3rd on "Miracle"?

That was probably the producer's idea; it wouldn't be mine. I know it's terrible, but for me it's "always stick to the root." One reason is that, on a lot of tracks, we've not got a lot of chords. There's nothing establishing the chord, so you've got to start somewhere, and I let the bass in to give you an indication.

Real bass players would be moving lines all over the place.

Well, I don't know what bass players do. I'm not a bass player myself, so I have no idea.

There were some almost Beatlesque touches on "Man in the Moon," including backwards string sounds.

vince clarke

They probably came from the Oberheim Xpander. The rhythm track on that one was mostly done with the [Roland] System 100M. I've got this six-channel ARP sequencer, which I use like a drum machine. It's got 16 steps on it. I connect that to my System 100Ms. Then I get it to clock 'round and 'round, put the switches up for the different beats or whatever I'm doing, work on one channel, then the next, then the next, hitting different sounds up. It becomes a rhythm track to the music. It's a really easy way of working.

What about the bagpipish feel in the intro to "All Through the Years"?

That was the Xpander. The whiny thing at the top came because I had just seen a program about Professor Theremin [*The Electronic Odyssey of Leon Theremin*, discussed in the Feb. '94 issue of *Keyboard*]. Everybody I know saw it. I was trying to emulate that.

There's one spot on the album, on "Because You're So Sweet," where the synth plays a lead line — the melody, actually.

It just seemed like the right thing to do. The arrangement is very simple: verse, chorus, verse, chorus, middle eight, and chorus out. So it just felt right. I used an Oberheim SEM [voice module]; it can be quite a mellow-sounding synth.

You do seem to have limited the range of sounds you work with on I Say, I Say. *Aside from samples, there's no deep bass or filtery string patches.*

That wasn't planned either. When we work in the studio, it's like being in a toy shop. I've got all this analog stuff, and it all interconnects. I'll go mad in there. I'll know what I'm doing, but I'm not planning it particularly.

Do you remember your sound sources after the record is done?

No. I know that the bass drums usually come from the ARP 2600.

So how do you prepare to reproduce these songs onstage?

It's a nightmare. It took me longer to program for the last tour than it took me to do the album, because none of these synthesizers has a memory. Once you've written the next song, that's it. You're finished. I couldn't take my modular Moogs on tour, so I scattered things out and used Prophet-5s, Junos, Jupiters, stuff like that. I took on equivalent sounds. On a track I may have 16 musical things happening. I use an MC-4 live, so I brought all of that down to four

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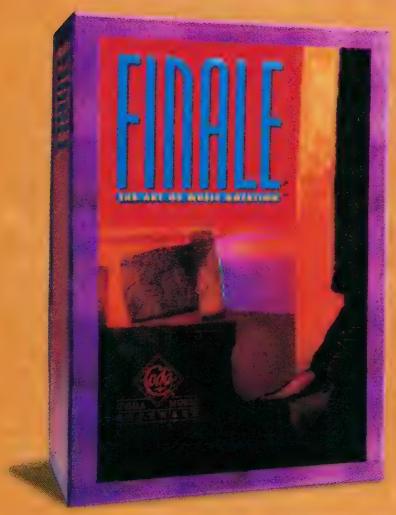

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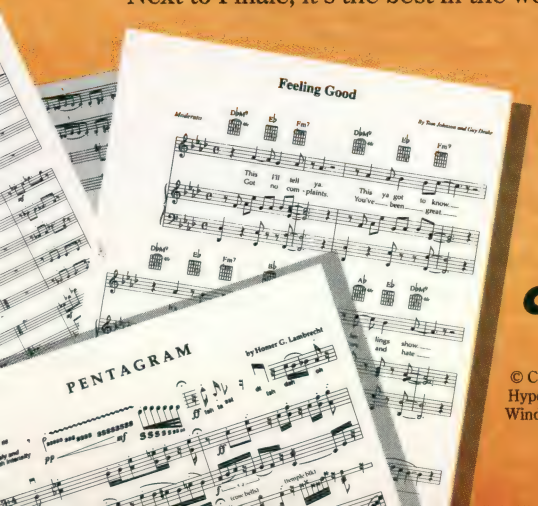

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CODA MUSIC TECHNOLOGY

vince clarke

synthesizers and got rid of the things I felt I wouldn't necessarily need.

Which four synths did you take on the road?

I had an Oberheim Xpander, a Jupiter JP-8, a Minimoog for bass, and a Sequential Prophet-5.

No MIDI?

No MIDI.

Why not?

It's so out of time. It's crap. It gives you a constantly sloshy sound. I can't stand it. On the album before this one, we started using scopes to scope the timings of every sound. A click track would go on one channel. Then you'd feed the sound through the other channel, so you could change the timing of the bass drum to fall exactly on the point of the click. Every sound was scoped. You can't do that with MIDI, because it's a bit irregular.

I take it you've never added any MIDI retrofits to older gear.

I've had MIDI retrofits taken *out*. On things like the OB rack and the rack Moog.

Why spend the money to take it out? Why not just ignore it?

It's just my puritannical view of MIDI.

Why not sample the sounds you need for concerts?

It would take too long. Besides, when I'm preparing for a tour, I'm not trying to reproduce exactly. So, in a way, preparing for a tour is quite artistic as well. I'm doing new interpretations of the songs, getting sounds. I might base it on what I've recorded, but I'm messing about.

If you don't play keyboards anymore, what will you do onstage for the next tour?

For the last tour, I drove around in a tank with all my keyboards in the roof. I had a telly fit inside it, and I watched that. Everything was sequenced; I had my headphones geared to my television so I wouldn't miss the cues: "Next song!"

Isn't there a risk that audiences will be disappointed at not seeing a performance onstage?

Most people who go to concerts, whatever the music might be, aren't particularly musos. They don't have a clue what anybody's doing up onstage. They like the band or the music, and that's it. If you say, "That's a great bass sound on that record," a lot of punters wouldn't know what the bass is. They're interested in singing the song in the bathroom or the shower; that's what's important to them.

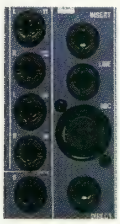
TO MAKE OUR MIXER SOUND JUST LIKE THE COMPETITIONS' WE'D HAVE TO GET RID OF ALL THIS!

INTRODUCING THE

SPIRIT FOLIO RAC PAC

CHANNEL INPUTS

The Spirit Rac Pac offers mic and line inputs on all mono channels with gain adjustments from -50 to +8. Also included are two stereo channels (4 line level inputs) for single fader control of your stereo keyboards or drum machine.



MID SWEEPABLE EQ

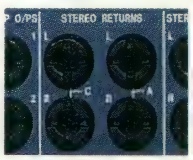
With the Spirit Rac Pac we let you select the frequency points... from 250Hz to 6kHz. Our competitors select your mid frequency points for you. (We think you're intelligent enough to decide what's best for your music!)

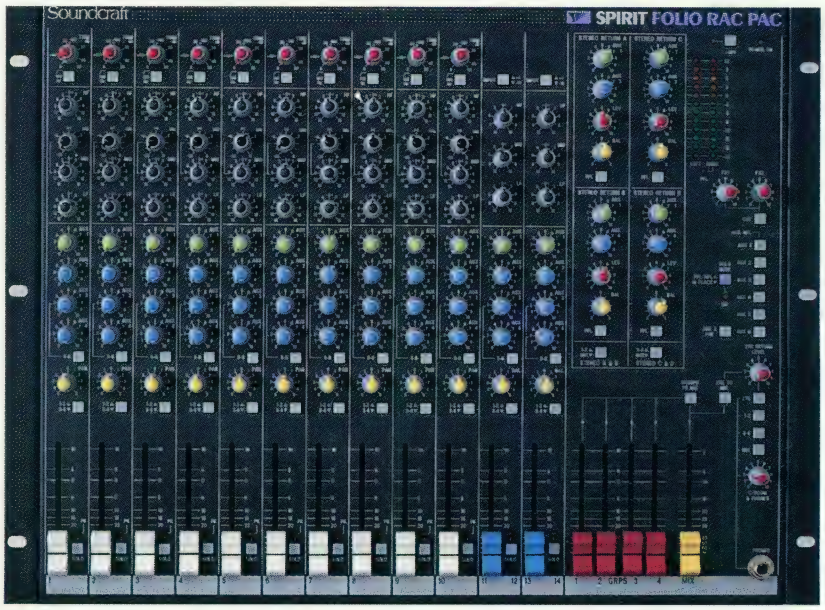
TRUE DIRECT OUTPUTS

*The Spirit Rac Pac features individual inserts **and** true post fade equalized direct outputs. The competition makes you choose one or the other. And, if you choose direct outputs, your signal bypasses the EQ.*

AUXILIARY LOOPS

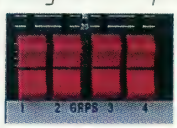
The Spirit Rac Pac gives you 6 auxiliary outputs, and the ability to solo all 6, not just the first 4, like other mixers! Plus, the Rac Pac provides a return for all 6 with stereo returns. That's 12 additional inputs!





4 SUB GROUPS

The Spirit Rac Pac provides 4 discrete sub groups which are assignable to separate left and right stereo outputs. Other mixers require you to sacrifice your channel mute function to achieve 4 sub groups.



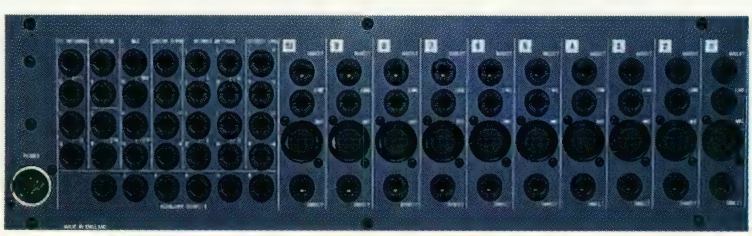
EXTERNAL POWER SUPPLY

The Rac Pac provides an external power supply, which eliminates any chance of that annoying 60 cycle hum!

With built-in features like a high-pass "rumble" filter, direct outputs on all mono channels, true sub groups, and a full master section with control room outputs and two track returns, why would you settle for anything but the Spirit Folio Rac Pac?

HOW WE RACK UP AGAINST THE COMPETITION

	SPIRIT FOLIO RAC PAC (RP 28)	MACKIE 1604	SAMSON 2242
TOTAL NUMBER OF INPUTS	28, including 6 returns & tape returns routed to mix.	24, including stereo returns	30, including 4 stereo returns
EQ	3 Band with sweepable mid on Mono inputs 3 Band fixed on stereo inputs	3 Bands fixed only	4 Band fixed
AUX SENDS	6 (Aux 1-always pre-fade, Aux 2 -Pre/post switchable globally)	6	6
STEREO RETURNS	6 (4 stereo returns, 2 stereo FX returns)	4	4
HIGH PASS FILTER	Yes (at 100Hz)	No	No
SUB GROUPS	4 discrete	No (2 separate stereo buses)	No (2 separate stereo buses)
TWO TRACK RETURN	Yes	No	No



SPIRIT
By Soundcraft

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A Harman International Company

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A Musician's Guide to Working, Playing, and Prospering Overseas. If you make your living playing live music in clubs and hotels, you probably have noticed that it's getting harder to pay the rent nowadays, let alone buy the latest gear or groceries. You've noticed DJ's taking a sizable bite out of a musician's paycheck, along with the winds of change that include such trends as karaoke bars. Eight-piece show bands are now duos, five-niters are now two, and live pianists are fading into memory as computerized versions play their bittersweet songs in the corner. ➢

BY ED BRAZIL ILLUSTRATION: JOHN PIAMPIANO

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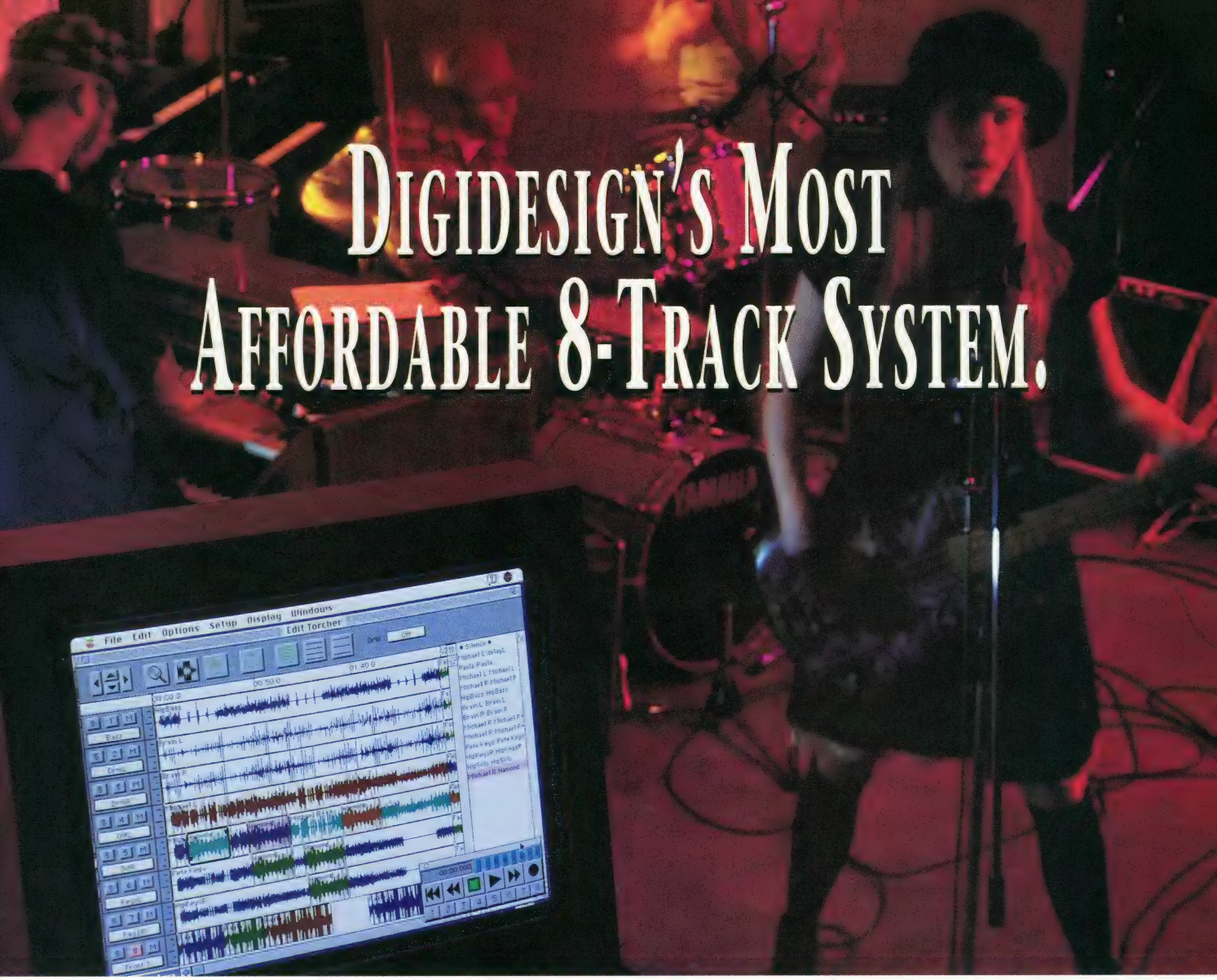

Introducing the new 882 I/O™ for Session 8™–The break you've been waiting for.

If you've been wanting to get into a hard disk recording system but the price was a bit steep, we've got some great news for you. Because with the new 882 I/O, you can now get into Digidesign's revolutionary Session 8 system for about $1,000 less. (Yes, you read that correctly.)

Imagine: 8 tracks of crystal clear digital audio. Random access digital editing. Digital track bouncing and stacking. And unparalleled MIDI compatibility. All for a price that compares very favorably to tape.

How did we do it? By creating a new audio interface that pairs the original Session 8's excellent AD/DA converters with a streamlined layout (8 ins, 8 outs, stereo mixdown, single-rack space design). Hook up the 882 I/O to your mixer and you have a complete system with the same sparkling sound quality that's made Digidesign famous.

882I/O front panel

882I/O back panel

SOUNDS COOL, RIGHT? IT GETS EVEN BETTER.

Session 8 is now more compatible than ever. Here is just some of what's new. Call us for the latest!

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- **New Digidesign ADAT® Interface***
- **New Sound Designer™ II****
- **New DINR™ Noise Reduction System****
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Many factors contribute to that uncomfortable "gosh I need a day job" feeling. One big turning point came with the enactment of tougher drunk driving laws: Fewer people now go out at night, which means less money is available for the club's entertainment budget. If you are working the hotel industry, keep an eye on the fresh flowers in the lobbies and on dining room tables. Statistically, hotel management will cut flowers from their budget first, with entertainment next in line. Flowers missing? Time to get nervous!

Still, all is not lost. Before you dump your gear and move in with your parents, you should know there may be a solution to your economic and musical woes, one that provides money, musical expression, and a healthy dash of high adventure. That solution is *going global.* Many musicians these days are beating the economy, seeing the world, and getting paid to do it by performing overseas.

There is no better time to consider an international gig than right now. The music scene is on fire abroad with a multitude of good-paying jobs, from the huge, high-tech clubs of Asia to the piano bar scene in Europe. American musicians are taking advantage of this time to export one of our few viable export products. We might not be able to sell cars overseas, but a dash of good old American music goes a long long way!

WHY AMERICAN MUSICIANS?

The demand for American musicians stems from a love of American music as well as a fascination with American culture. Foreign audiences usually acquaint themselves with American music through radio, television, and subtitled movies. While you're working on the latest dance sequences at home in Boise, a large audience all over the world is finding joy in our forgotten past. You'd be surprised at the number of people who can't speak a lick of English, but are able recite word for word several English-language tunes.

Another factor that creates jobs, especially in Asia, is that American performers are highly regarded both for their versatility and that intangible quality known as soulfulness. Although extremely proficient at reproducing American cover tunes and willing to work cheaper than American entertainers, bands from the Philippines, for example, are often perceived as machine-like and robotic by many entertainment buyers. Of course, just being an American will not guarantee you a gig over an inexpensive competitor. To get the best gig, you and your act will have to perform better, sing better, dress better, dance better, entertain better, and smile more than anyone else in the running.

Besides earning a good living, the opportunity of seeing the world and experiencing each country's unique culture can create stories that will last you a lifetime: When's the last time you tried a bite of fried scorpion before playing your gig? Professional benefits can be phenomenal too. How often do you get the opportunity to play stadium dates to packed audiences? How about national television appearances and autograph sessions? It doesn't happen at your local Holiday Inn but it's not uncommon for some U.S. bands that work overseas. If your sense of adventure thrills at the thought of scuba diving off a tropical island, hand-feeding hundreds of wild monkeys on Monkey Hill, or teaching the wave to Turkish troops, then you should give serious thought to an overseas gig.

One of the last things you will hear your flight attendant say when you land in certain contries is, "Thanks for flying with us, and death to drug smugglers."

THE INSIDE SCOOP

Before we get started on the details, it would be a good idea to put a map of the world in your hands, click your heels three times, and repeat out loud: "Conditions will vary from country to country!" Matter of fact, *everything* will vary from country to country, so it pays to know about the places you want to visit. Start by taking a look at the map and getting familiar with the different countries of the world.

An overseas job can last anywhere from one to six months, with 12 weeks in one location being typical. If you play well enough, the overseas venue will probably want you to stay as long as possible to cut down the airline expense of flying multiple acts back and forth. Some musicians fall in love with the lifestyle and choose to stay abroad touring from country to country for a year or two at a time. An overseas gig will usually provide salary, round-trip airfare, allowance for excess baggage, accommodations, meals or meal allowance, laundry and dry cleaning.

Here are basic guidelines to consider:

Salary. Amounts can vary drastically from country to country. The better act you are, the more you will make. But don't automatically expect a hefty take just because it's overseas. Consider the economy of the country to which you will be traveling, and what your spending power will be there. For example, if you are offered a job playing in China for $75 per day (a little below the average pay for an overseas job) you might not jump at the chance. But if you knew the local economy and realized that by law a native musician performing in China makes the equivalent of $6.00 U.S. per day, half which goes to the government, $75 begins to look like a lot of money. *Think of not only what you can make, but what you can save.* Questions to be concerned with include what currency will you be paid in, whether it is taxable (ask your accountant), and how often will you be paid.

Airfare. Most jobs will provide you with round-trip economy-class air fare to and from the States. Avoid jobs that want you to pay your own airfare. Make sure to ask for an open-end return on your ticket in case you want to stay longer than you originally thought. Above all, never give your airline ticket or passport to anyone to hold while in another country.

Excess Baggage. Most venues should provide some compensation for a reasonable excess baggage to accommodate your gear and costuming. If you're a solo pianist you won't have too much to worry about, but if you have racks of gear this can be very important. The key word here is "reasonable," which doesn't mean packing a rack the size of a Buick for a small club gig. Remember, the weight allowance quoted is a total for both your arrival and departure. Don't take back hundreds of pounds more than you bring.

Accommodations. The better gigs will supply you with a hotel room, or at least adequate housing off the property. Questions to ask include: Will I be sharing a room with a band member? If I'm staying off-property, will the place have air conditioning? A kitchen? A phone? How close to the venue

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will I be? Will I have to walk, is adequate public transporation available, or will I be driven to and from work?

Meals. You could be guaranteed anything from three full meals per day to absolutely nothing. Make sure to ask whether your meals are credited to your house account (meaning you have to eat at the property) or if you actually get spending money for meals (which means you can eat where you want, and possibly save the excess).

Laundry & Dry Cleaning. This is negotiable from job to job, but it is usually standard for the venue to provide cleaning for your stage costumes.

ATTITUDE (WE'RE NOT IN KANSAS, TOTO!)

Before you go any further toward the adventure of a lifetime, take an honest look at yourself. Flexibility and a mature approach to life are critically important for overseas work. You can absolutely count on things being different from the Naugahyde lounge gig at your local Ho Jo. From electricity to language, you are in a different world, and you'll need to adjust accordingly. One of the great benefits of traveling overseas involves realizing that not everyone approaches life the same way Americans do. The beauty of travel can be found in appreciating the differences in cultures.

Can you can keep a cool head at all times? An overseas job is no place for hot heads or attitudes. In some countries, losing one's temper causes one to "lose face." If you are the type that turns into a screaming maniac at the drop of a cord, perhaps you should consider another career option.

Remember, too, that while performing overseas, you are not only a musician, you are also an ambassador of American music. Foreigners harbor many stereotypes of Americans, with one of the most popular being that we are pushy and loud. Will you fit that stereotype or will you rise above it?

An overseas jobs can be the adventure of a lifetime, but make sure you take a good strong look at yourself and come up with some honest answers before you commit yourself to going.

SIGN ME UP, I'M READY

Okay, you've decided you're a reasonably sane person with a killer act. You want to get out and see the world, practice your craft, and get paid to do it. What next?

The logistics of landing a job in an exotic country can seem staggering, if not insurmountable. There are numerous pitfalls to avoid, details to handle, and language barriers to overcome. It is highly desirable to be represented by a professional international booking agency with a strong track record in this market. A professional agency will guide you through the miles of mind-numbing red tape, foreign port cargo restrictions, and safe country/civil unrest stipulations. Beware of fly-by-night operations that claim to book internationally. There are numerous horror stories of inexperienced agencies leaving musicians stranded without plane tickets or jailed for improper papers. Make sure the agency you contact specializes in overseas bookings, and has a proven track record in navigating the foreign market.

Some of the well known agencies specializing in overseas markets include That's Entertainment International (1360 N. Hancock St., Anaheim, CA 92807), Entertainment Associates (12439 Magnolia, Ste. 104, N. Hollywood, CA 91607), and Rising Star Productions (Box 723608, Atlanta, GA 31139).

There is an undeniable sense of comfort in knowing you are being saved the huge expense of costly mistakes, foreign government regulations, and mounds of legal paperwork. More important, it's good to know you have a home team you can trust to support you when you are halfway around the world.

PROMOTIONAL PACKAGE

Step one in landing an overseas job is to supply your prospective agency with an excellent promotional package. A few musts for the package include:

Video. We live in a world of technology, so before many venues put out thousands of dollars to fly your act around the world, they'll want to see exactly what they are getting. A good current video showing the act doing a collage of songs is definite must; ten minutes' worth is fine. You don't have to spend a fortune on a video, but make sure you have a quality product. After all, this will be your calling card. Think of your video as taking the place of a live audition.

Photos. A professional 8" x 10" that reflects your current style and look should be included. There is a very good chance these photos will be used for publicity purposes, so take the time to make sure your picture looks as good as possible. While you are at it, have a couple of different poses taken. The competition can be fierce for press coverage in foreign papers and magazines. Some will want their own "exclusive poses" for use in their publications.

Audio Tape. A short audio demo tape is always helpful. Include a collage of as many different styles as you have, but try to keep the tape under ten minutes.

Biography. A short bio of you or the band should include any relevant press clippings. The bio is used for writing press releases as well as proof of employment in securing overseas work visas.

You would be surprised at the number of excellent gigs that go to the band with the best promo, instead of the best chops. Make sure to read that last line again. Sure, it doesn't seem fair, but it is reality in today's marketplace.

Passport. If you don't have a passport, take the time *now* to get one before being caught in the rush. Jobs fly fast and furious: You'd be amazed at the number of high-profile jobs that get filled in a hurry because one group/performer has their passport in hand while the other doesn't. While you're at it, make sure to get four more copies of your passport picture taken for visa purposes; this will save you an extra trip later. If you already have your passport, check that it is still valid. Depending on which country you are going to, certain vaccinations may be required. You might want to get a good physical before you go, and ask your doctor for his or her advice.

HURRY UP AND WAIT

You've done your homework. You have a great act, and you've supplied the agency with a strong promotional package. Now comes the hard part: waiting for the right job to come in. Unfortunately, this can take anywhere from a day to a lifetime. You never know when *the* job will surface, so it pays to be in a constant state of mental mobilization. Some jobs will come in literally the next day, while others can take up to a year in advance to nail down. Since your agency will usually have a large number of artists in their files, it's a good idea to check in by phone about once a week with a friendly reminder of who you are and your readiness to go. Whatever you do, keep your chin up and your act tight. If you've done all of the above, there is a strong chance there will be a job waiting for you somewhere in this world.

CULTURE

While waiting for your ship to come in, take the time to learn as much as possible about the countries you expect to work in. From

Continued on page 50

If you've been puzzled about choosing the best synth workstation, a TS keyboard is the answer to all your questions.

Where do I get great sounds and General MIDI compatibility? When it comes to range and quality of sound, the TS is second to none. There are over 700 onboard sounds for every style of music including all 128 GM sounds *(as well as all 9 GM and GS drum kits)* for spectacular sounding playback of any General MIDI input.

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Where can I find out more about the TS? Visit your Authorized ENSONIQ Dealer for a demo, or call ENSONIQ at **1-800-553-5151**. Once you compare its great sounds and features to the competition, there'll be no question that it's the best music workstation — the complete answer to your musical needs.

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history to language to what kind of weather to expect, your library or travel agent will be an excellent source of information. Remember that laws can vary drastically from those in the States. Chewing gum is prohibited in some countries, sex with foreigners is prohibited in others; and the fascinating small print goes on and on.

I'VE GOT THE GIG!

You've just landed a monster gig! You'll be leaving in two weeks! Now what do you do?

Packing. Although it might seem impossible to pack several months' worth of clothes into two suitcases, it has been done often with great success. Most flights leaving the States will allow you two pieces of checked baggage and one carry-on piece of luggage per ticket. Make sure to check with the individual airline well in advance of your departure date for the airline's exact baggage requirements. To save costly overweight charges, make sure your checked baggage weighs less than 70 pounds per piece and meets the dimensions of the airline you are traveling on. The next-to-last thing you'll want to do is discard items from your baggage at the ticket counter just to make the weight limit. *The* last thing you'll want to do is fork out the costly overweight baggage charge yourself.

Also make sure to pack clothing that will correspond to the climate for the part of the world you will be visiting. It's not a great feeling to pack heavy winter clothing for your January gig in New Zealand, only to find out that January is the heart of summer in the Southern Hemisphere. Pack smart!

Always remember, drugs and traveling do not mix. Penalties for possession in foreign countries can range from prison time to death. One of the last things you will hear your flight attendant say over the loudspeaker when you land in certain countries will be, "Thank you for flying with us, and death to drug smugglers." These people are serious, so you can bet you won't have a mint on your pillow if you do time in these foreign prisons.

Costuming. Always dress better than your audience; it's a staple of the performance business both here and abroad. A number of foreign cities pride themselves on stylish fashion, so be prepared. Again, you represent America to your audience. Your foreign audience's perception of the States has been molded mainly through what they have seen in movies and television. It's sad to say, but if you perform in a country where reruns of *Dallas* are hot, there is a good chance many countrymen will think all Americans run around in glittery designer suits, cowboy hats, and gowns. This doesn't mean you should load up on a boxcar full of glitz, but putting a little extra zing into your wardrobe will enhance your image many times over. Hollywood has given the world a perception of the States, so why not add a dash of Hollywood to your wardrobe?

Gear. Many overseas clubs save money in excess baggage charges by investing in gear for their club. Depending on the venue, musical equipment available for your use can vary from one bare stage to a complete setup that includes state-of-the-art keyboards, drums, amps, P.A.'s, and concert lighting.

Keyboard players should keep in mind the voltage of the electrical system in whatever

country they plug into. Shocking stories abound of absent-minded players frying their gear by accidentally plugging in to the 220-volt lines. Clubs in such countries will usually provide power conversion to 110 for you. Take the time to check your connections with an inexpensive voltmeter. Don't discount such unseen hazards as a cleaning crew unplugging your gear during the night. *Always check!*

Make sure your band packs extra batteries, drum heads, sticks, and cymbals, especially when traveling to third-world countries, as such items are not always available abroad. If you are running sequences, it always pays to keep a backup copy of your data in a separate location from your gear. Also, make sure to pack your gear in solid flight cases as though you were carrying nitroglycerine.

Repertoire. You're home free, right? Not quite! Before you hit the first downbeat you better make sure you've done your repertoire homework. What works well in the States doesn't necessarily work overseas. Foreign audiences usually acquaint themselves with American music through movies, television and radio. One trick to have in your bag is to know songs from major motion pictures. It's surprising how film music can melt the language barrier. American films show all over the world with subtitles, and their theme songs can be very popular. Expect to play these songs more than you would regularly. Since English is a second language in most countries, it takes some effort for the listener to learn the words and meanings to American songs. For this reason, the audience will tend to request the same song repeatedly. So before you travel, always ask the venue where you will be performing for a list of the songs favored by its regulars.

Another nice touch is to learn a song in the language of the country in which you are performing. Even if you don't get it exactly right, you will gain major points for your efforts. In fact, it's a good idea to go a step further, buy a phrase book, and study it before departure. When it's raining at two in the morning and you can't find the bus stop, you'll be glad you did.

Doing your homework can pay off handsomely. Pegasus, the first American band to perform in China, took the stage on their first night and tore through a tightly rehearsed, highly energetic Top 40 set. To their surprise, the response was, at best, underwhelming. Why? The songs, though popular in the West, were virtually unknown in Beijing. The band members regrouped, and on their next set decided to try more friendly and familiar tunes. The song that got the first response was the Lionel Richie ballad "Say You Say Me": A couple got up and danced, another followed, and then the multitudes came, all dancing to tunes they knew. Since then, the members of Pegasus have become the equivalent of pop stars in China, which in turn has led to all sorts of turnarounds in their careers. The band has recorded two albums and made a television appearance on the Chinese version of *American Bandstand* before millions of viewers; its members are recognized on the streets of Beijing. Not bad for simply adjusting to the room!

SUMMARY

Performing overseas can give you memories to last a lifetime. If you take the time to do your homework in advance, your overseas gig will reward you with smooth sailing both personally and professionally. Think how much of a difference can be made in your life by spending a few months sampling the fruits of the world. With a little savvy, you can keep your bank account full and see the world too. Bon voyage!

Ed Bazel is vice president of That's Entertainment International, an entertainment agency based in Anaheim, California, specializing in overseas tours.

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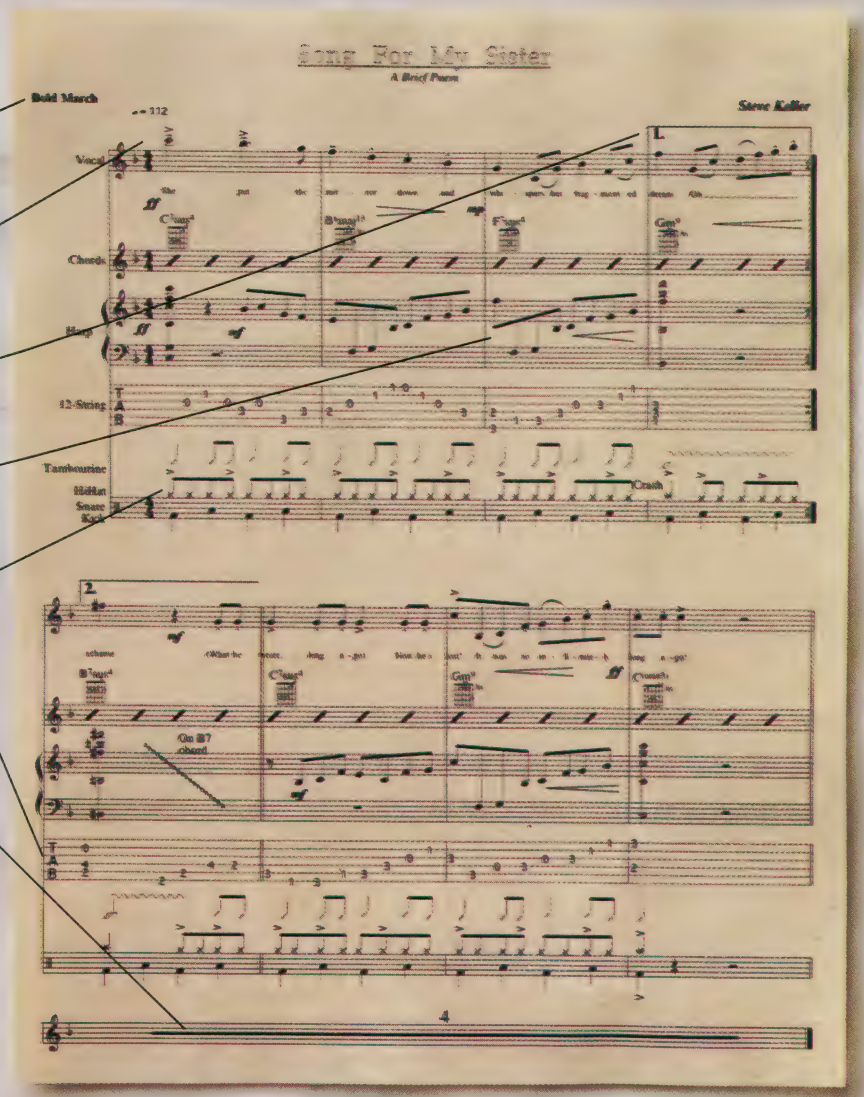

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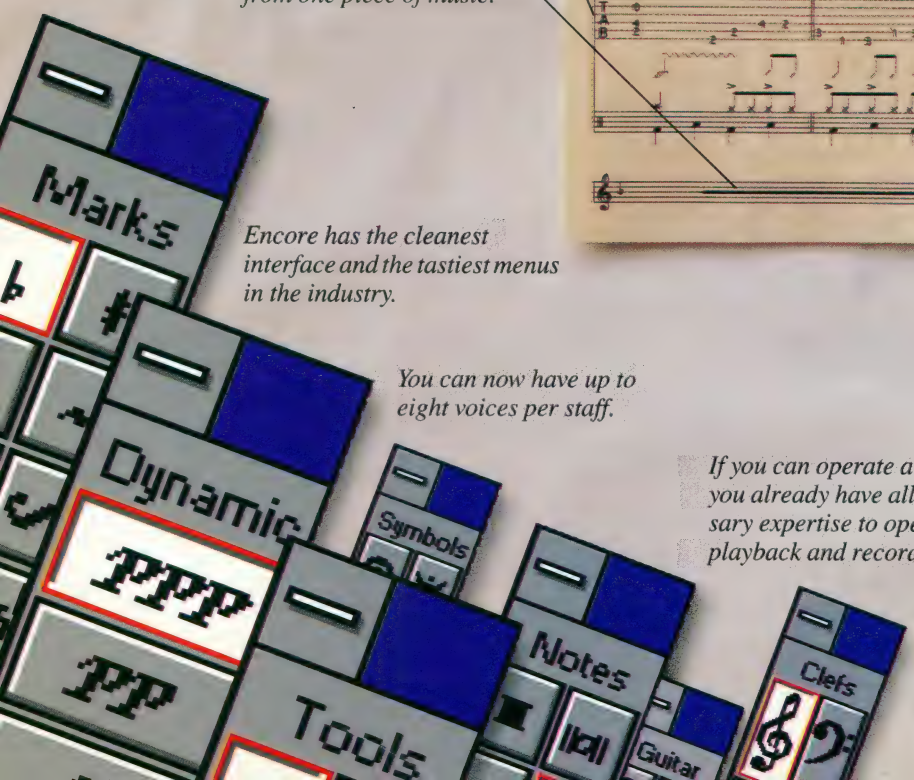

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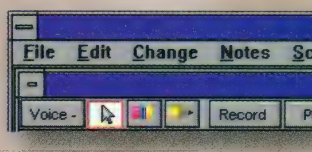

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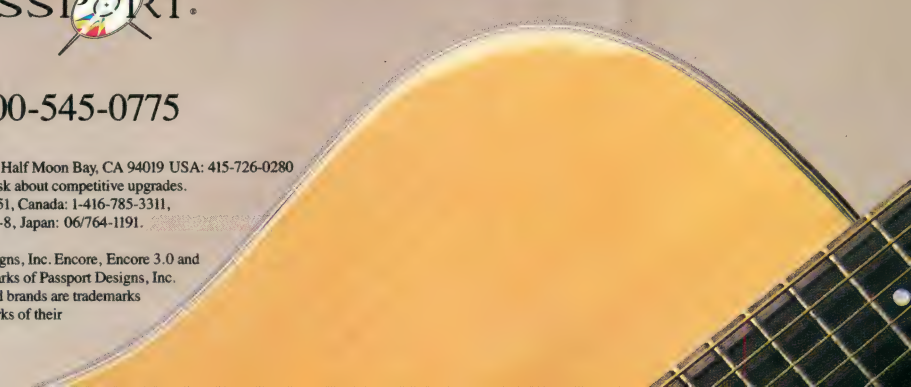
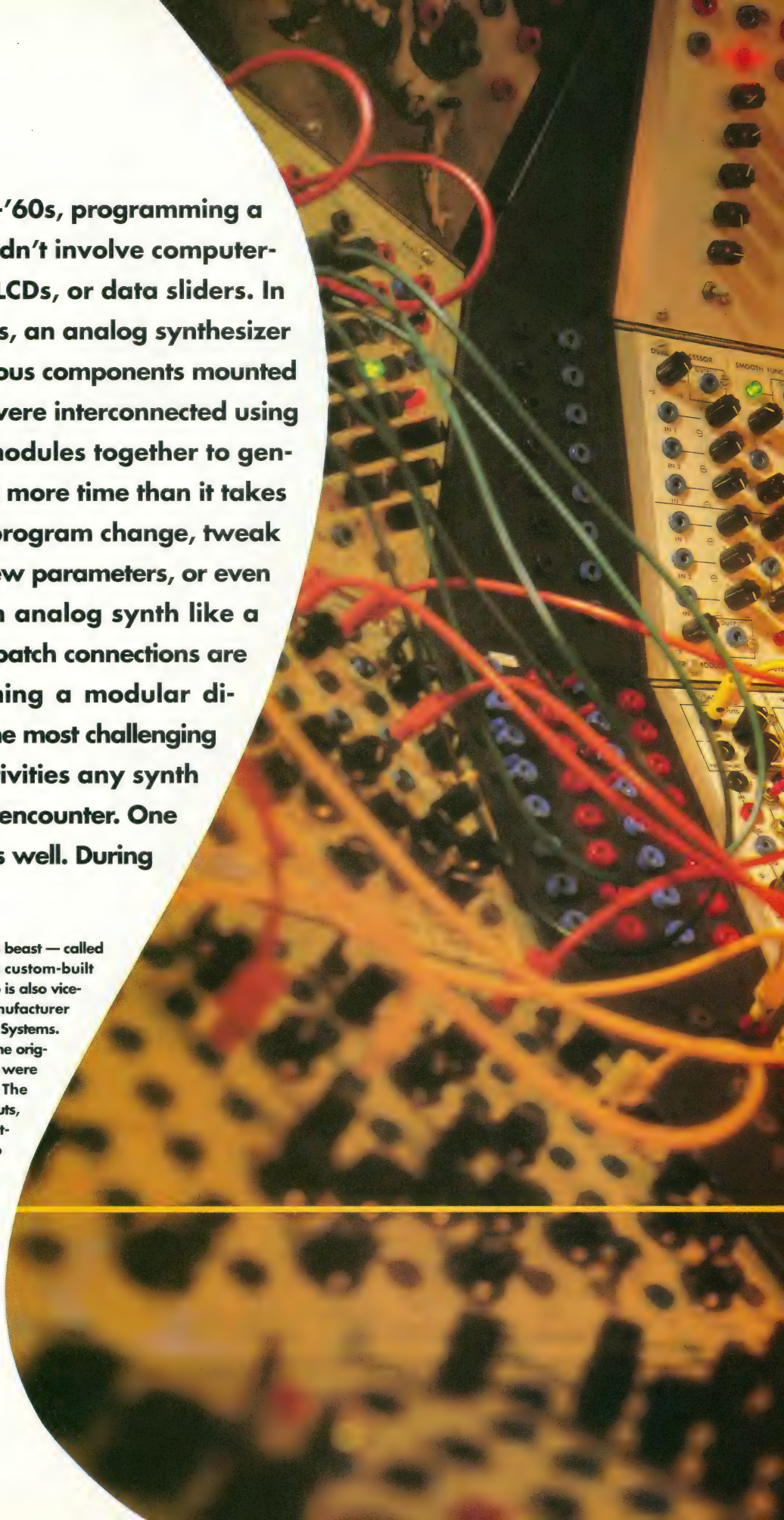


Back in the mid-'60s, programming a synthesizer didn't involve computerized buttons, LCDs, or data sliders. In its dawning days, an analog synthesizer was a big box with various components mounted in panels; the modules were interconnected using patch cords. Patching modules together to generate a sound took a lot more time than it takes to send a MIDI synth a program change, tweak a patch by changing a few parameters, or even dial new settings on an analog synth like a Minimoog, in which the patch connections are hard-wired. Programming a modular dinosaur could be one of the most challenging — and rewarding — activities any synth programmer could ever encounter. One of the most expensive, as well. During



One of the most familiar Serge synths, this beast — called the Mighty Serge — belongs to and was custom-built by new age composer Kevin Braheny, who is also vice-president of engineering for the new manufacturer of Serge Modular synths, Sound Transform Systems. According to designer Serge Tcherepnin, "The original graphics were designed so that there were no legends; there were only shapes. The shapes represented things like inputs, outputs, control-voltage inputs, control-voltage outputs, voltage-processing parts, and audio parts. It was very emblematic. Hardly any lettering appeared on the face plates, only these shapes. They were designed by Rich Gold. The face plates had structure and yet were able to be decorated in a very beautiful way."

BY MARK VAIL

serge modular systems

MAXIMUM ANALOG HORSEPOWER

PHOTOGRAPH BY MICHAEL ERDMAN

serge modular systems

the heyday of modular synths, systems like those from Moog went for tens of thousands of dollars. In many cases, the only way to play with one if you weren't rich enough to buy your own was to attend a large university. If you were fortunate enough to have access to a Moog or Buchla, you dealt with dozens of cables, knobs, and jacks; the ARP 2500 offered a bank of matrix patchboards. Buchlas tended to be smaller, but the 2500, a Moog modular, or, later on, an E-mu or Polyfusion modular system was huge and cumbersome. Some were so large they covered an entire wall. At the same time, a Moog, Polyfusion, or E-mu likely resembled an old telephone switchboard.

Thankfully, there were synthesizer enthusiasts who decided modular systems didn't have to be so big and expensive. One such person, French-born Serge Tcherepnin (pronounced tcher-*epp*-nin), developed a system that bore his name and became renowned for its compactness, power, sonic excellence, and affordable price.

VITAL STATISTICS

DESCRIPTION: Modular analog synthesizers designed by Serge Tcherepnin. Many of the modules are multifunctional, depending on the way they're patched into an audio or control signal chain.

SELECT MODULES: New Timbral Oscillator, Variable Q VCF, Variable Slope VCF, Variable Bandwidth Filter, Quad Channel Panner, Resonant Equalizer, Ring Modulator, Frequency Shifter, Dual Phase Shifter, Triple Waveshaper, Wave Multipliers, Dual Envelope Detector, Analog Shift Register, Divide by 'N' Comparator, Dual Schmitt Trigger, Smooth & Stepped Generator, Noise Source, Dual Random Voltage Generator, Quantizer, 4-, 5-, 6-, 7-, or 8-Stage Sequencer Programmer, 8 x 2 Sequencer, Touch Keyboard Sequencer, CV 8 MIDI-to-Analog Voltage Converter (introduced in 1993).

PRODUCTION DATES: Original 15 to 20, 1974. Production units were produced from '75 to '86. From '86 to '93, individual modules were made on a special-order basis. Full production began again in '93.

MANUFACTURER: First 20 were assembled at the California Institute of Arts in Valencia, California. Production continued in Serge Tcherepnin's house in Newhall/Saugus, a suburb of Los Angeles, and later on Western Avenue in Los Angeles. Serge Modular business moved to Fillmore and Haight in San Francisco in 1980. Serge production continues today in Oakland, California.

CURRENT CONTACT: Sound Transform Systems, 1615 Broadway, Suite #712, Oakland, CA 94612. (510) 465-6896. Fax (510) 465-4656.

NUMBERS MADE: Hundreds (total unknown because records haven't been kept).

ORIGINAL RETAIL PRICES: $3,250 for a three-panel system, about $5,000 for a four-panel system.

CURRENT USED SERGE VALUE: $1,000 to $2,000 on the street, $3,000 to $6,000 from a dealer.

CURRENT NEW SYSTEM PRICES: $1,850 and up per panel.

INSIDER INFORMATION: Will "Stonewall" Jackson of Ether Ship took his Serge system out with Greenpeace and played it through underwater speakers to the whales. . . . Rex Probe, who is now in charge of Serge Modular production, was an assembler of Serge Tcherepnin's first synthesizers. During the '80s, Probe cofounded Salamander Music Systems (SMS) with Dennis Sapputelli in order to produce the Voice 400 expander module and a "hardcore touring" analog/digital modular system with voltage-controlled dynamic FM, an analog delay line, and programmability. . . . *Keyboard* senior associate editor Jim Aikin sold his Serge Modular to a dealer who sold it to Vince Clarke; it later appeared on the cover of British music magazine *Sound On Sound* with a mannequin masquerading as Clarke.

PLANTING THE SEED. The system's development began in the early '70s in Southern California, where Tcherepnin was a professor at the newly founded California Institute for the Arts. "There were three Buchla studios and a political hierarchy that had control over getting into them," recounts Rex Probe, who joined Tcherepnin very early in the ballgame. "You swabbed the decks to get some time, but basically certain composers had priority and it was somewhat difficult to get any time on the machines, much less take them out to do anything live. One evening, Serge, Randy Cohen, and Richard Gold were driving in an old beat-up car down La Cienega Boulevard in Hollywood. They were complaining about the cost of large modular systems, which were the only synths that were available at that time, and saying the only reason they were in an institution was so that they could get their hands on such electronic tools. They concluded that they should build a modular synthesizer for the people that would be both inexpensive and powerful.

"We built the first one in Serge's home. I remember taking the frying pan from his kitchen stove, scraping out the eggs, and putting in solder to do the first hand-dipped prototypes. All the printed circuit layout taping was done by Randy and Richard. Serge stayed up for days and days cranking out the schematics, getting the component palate rich enough to call it a modular system, and the prototype circuit boards were all dip-soldered in the kitchen. This took place out in Newhall or Saugus, California, an L.A. suburb in the high desert near the campus of Cal Arts."

Was Probe a student or a professor? Neither. "I was an 'outside agitator.' An outside agitator decides that there's a lot of interesting people and a lot of facilities there at the school. I remember making patch cords for Morton Subotnick so I could get my hands on the keys to the Buchla lab."

After creating the prototype, Tcherepnin arranged for a coalition of students, professors, and outside agitators to assemble about 20 synths on the Cal Arts campus. "Our construction center was a four-foot-wide second-floor balcony with a railing that surrounded this 100-square-foot courtyard," Probe recalls. "We set tables up with just enough room for us to back our chairs up before we bumped into the practice rooms. We were sleeping in the practice rooms. I don't think we were really supposed to be

doing this. We'd switch the test benches around from room to room so nobody would find out what was going on. There were about eight or nine of us working on the building of the first units: Randy Cohen, Richard Gold, Naut Human (from Rhythm And Noise), Will 'Stonewall' Jackson (with Ether Ship), myself, and a few other people. The idea was, you paid $700 up front, you worked on the solder lines, and you'd get yourself a six-panel system at the end of this mass construction period. This went on for four or five months."

What was this early synthesizer like? "There wasn't a keyboard," Probe explains, "but a sequencer/programmer. There were four buttons per hand that you would use to manipulate voltages, so it was like playing a sequencer manually. The synth had three oscillators with voltage-variable waveshapes, and there were some unique modules that nobody had ever seen before. Serge's forte, in my opinion, is unique-sounding filters — a wide variety of them — and wave processing modules. The standard voice in many synthesizers comprises an oscillator, a filter, and then the VCA. Serge added another section between the oscillator and the filter, called the Wave Processor section. You can change the timbre of the sound with it. On other synths, you can only alter the sound at the oscillator using frequency modulation, or with a filter or amplitude modulation of the VCA. Otherwise, there hasn't been anything to really extend the richness of the waveforms, except maybe for ring modulators. On a Serge, you've got six or seven inputs into which you can stick either audio signals or control voltages — or both — and modulate the timbre to get some very rich tones."

INITIAL GROUNDWORK. Actually, these early Serge synthesizers — called "Tcherepnins" by their assemblers — weren't their creator's first excursions into electronic music instrument building. "I was very interested in noise-making and things like old tape machines back in the '60s," Tcherepnin says. "I grew up when tubes were around, so I was essentially self-taught in electronics. As a composer, I started doing electronic tapes in the '60s and noticed that I could use a lot of things around me, like transistor radios, which I would re-adapt for use in making electronic noises. I started with what some people would call 'junk electronics.' At a certain time, I became aware of people like Robert Moog and Don Buchla, as well as a group of people at Yale University who developed a really wonderful electronic music synthesizer called the Pulsar.

"After attending Harvard and Princeton, where I studied music and physics, I started teaching at New York University. Meanwhile, I kept up my interest in electronics at a hobby level. Eventually, I went to the California Institute of the Arts, where I taught music composition and things like that. I was still interested in the nitty-gritty of electronics, because I was more interested in what the electronics could do for sounds than trying to shape a musical instrument using electronics. I placed myself in the opposite corner from people like Moog and most other synthesizer manufacturers, because my interest was to see what could come out of the electronics rather than trying to shape new instruments to make old sounds. I was never interested in samplers or keyboards, because eventually the emphasis was always to duplicate existing sounds. I was more interested in noise and why distortion happened. I think, for example, that the fuzz box was a great invention.

"In the early days, I was really interested to see how much could be done with as little and as elegantly and unusually as possible. At Cal Arts, we developed a kit that consisted of four or five panels of modules which was more than equivalent to a Moog or Buchla system that might have taken up nine square feet of space and cost $15,000. I have always wanted to give as many possibilities of the electronics themselves to people. When I designed a new module, I would say, 'Let's see how many things I can bring out of the electronics for people to use.' It usually ended up as this incredible monster which has a lot of openings [inputs and outputs] and a lot of controls.

"The second thing whenever I tackled a module, I always took it upon myself to get the best performance out of the product. I ended up doing a lot of work on perfecting modules that had essentially been designed before, but when I took them over, I went from the point of view of a person who wanted to do very high-quality products.

"At Cal Arts, I was associated with people like Morton Subotnick and Marianne Amacher, who used to love Moog products. I worked with her and got to know what the problems were with some of the Moog equipment she liked. The same thing with Morton Subotnick; I built custom modules for him for his environmental works.

"Eventually I left my teaching position and continued doing my synthesizer for people like Stevie Wonder and Malcolm Cecil. But I kept very non-commercial so that the company never really got very big. I started the Serge company in 1975 with the first generation of products that we had developed in kit form with my students. The kit was so successful that the company grew out of it."

POWER SERGE. After several successful years in the West Hollywood area, Serge made a move. "I had wanted to leave for San Francisco for a long time, and I took the opportunity in 1979, when the company was still small. I have a history of leaving the company to get away from it to let it go on by itself. For one year, Serge was taken care of in Southern California by Kevin Braheny, Darrell Johansen, Paul Young, and several other people. They joined me again in 1980. Then we started working in earnest, especially since I had to make a living. They continued with me until about 1984. At that point, by necessity, I had to continue by myself with much less high-level help."

Although production of modules never totally ceased, entire modular systems weren't made from 1986 until last year. Meanwhile, Serge had other interests. "In '83, I started doing a lot of consulting and designed some electronic toys. In 1986, I became interested in publishing. By the way, I was a composer until 1968, when I essentially retired. I began to do publishing in 1986, and I returned to musical composition early in 1993."

Today, Serge spends most of his time in France with his family, although he sometimes returns to San Francisco. Sound Transform Systems' Rex Probe, who assisted in making the earliest Tcherepnin synths at Cal Arts, took over production of the entire Serge line last year. Probe, who ran another synthesizer company called Salamander Music Systems during his hiatus from Serge, speaks of Tcherepnin's synthesizer design: "The Serge system is more closely related to the Buchla system than anything else, due to the fact that there is voltage scaling on every module in both positive and negative quandrants. Basically, you could invert the control voltage at every input and scale it, unlike many of the other systems. The intention of scaling was to keep everything nice and controlled.

"On Don Buchla's first machines, you controlled the scale of the note per note [that is, each note had to be tuned separately], so it was like a touch sequencer with arbitrary scaling. Then you'd scale it further in each oscillator. The Serge is similar. The difference, though, is that Serge, in the late-'70s designs,

became interested in certain standards of control as well as maintaining the wide-open standard. So he added the one-volt-per-octave tracking on his oscillators and filters and some of the precision LFO stuff.

"One thing Serge did was bring into his system a level of precision. In order to get high stability with tracking groups of oscillators, his design of the New Timbral Oscillator, the NTO, became a high statement of analog music oscillators in that it could be swept across its full range without switching. Many other systems had an octave-select control, and then you deviate within that octave. The Serge has a continuous sweep of 1,000,000-to-1 or more — from 1Hz to 100kHz — without range switching. It also has one-volt-per-octave tracking, so you can go hog-wild, and then limit the hog-wildness and go right into one-volt-per-octave tracking. You had the best of both worlds. Serge designed what is in my estimation one of the finest discrete music oscillators.

"He also established a new standard of voltage-controlled amplifier. At that particular time, the VCA was one of the weakest parts of the signal chain in any synthesizer. Serge came up with a unique circuit and unique implementation that allowed much better dynamic characteristics. In other words, lower noise and better-sounding than what was available at the same time period. It was the second series of Serge Tcherepnin's synthesizers that became the Serge Modular Systems during his time at Western Boulevard in Los Angeles. That's when he was in full production and had a small staff of dedicated assemblers."

According to Tcherepnin, the second generation of synth modules designed in Southern California is the same as that still being produced now, "except for modules done by Rex Probe, who's taken over building the systems."

REFLECTIONS OF A MASTER SYNTH BUILDER. We've heard Rex Probe praise Serge Tcherepnin's synthesizer designs. Of what was Tcherepnin most proud? "I'm proud of the wave-shaping aspects that I did, which originally were inspired a bit by Buchla and a bit by the fuzz box. I discovered many types of changes that you could make very simply and very elegantly to change the sound. I'm also really proud of the overall system concept, which was not to use music as the basis for making choices, but using electronics as the basis. That originally came from meditations on decisions made by other manufacturers, where all kinds of neat things were hidden in the electronics, which needed only bringing out in order for them to be used. When I was a kid, one of my very first synthesizers was a transistor radio that I modified by hooking up jacks to sensitive points on the circuit-board traces that could be altered to make an incredible sound-effects generator. I put tiny little jacks to very sensitive spots in the radio and used capacitors and resistors. That was when I was more artistic. That was the essence of my interest.

"If you take a subjective look at one of my synthesizer systems, you'll notice that there are more banana jacks and stackable patch cords than anything you've ever seen before. That was the essence of the system, the ability to connect anything to anything else, as long as it might be interesting.

"The third thing I'm proud of is, of course, the cleanliness of all my musical modules. For example, the modulators I took one step further than [Harald] Bode, and there are really clean electronics in that. I guess the fourth thing that I'm proud of is the fact that I did this continually instead of getting a job." ■

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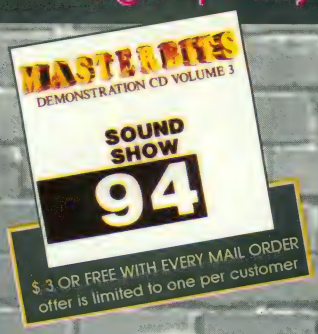

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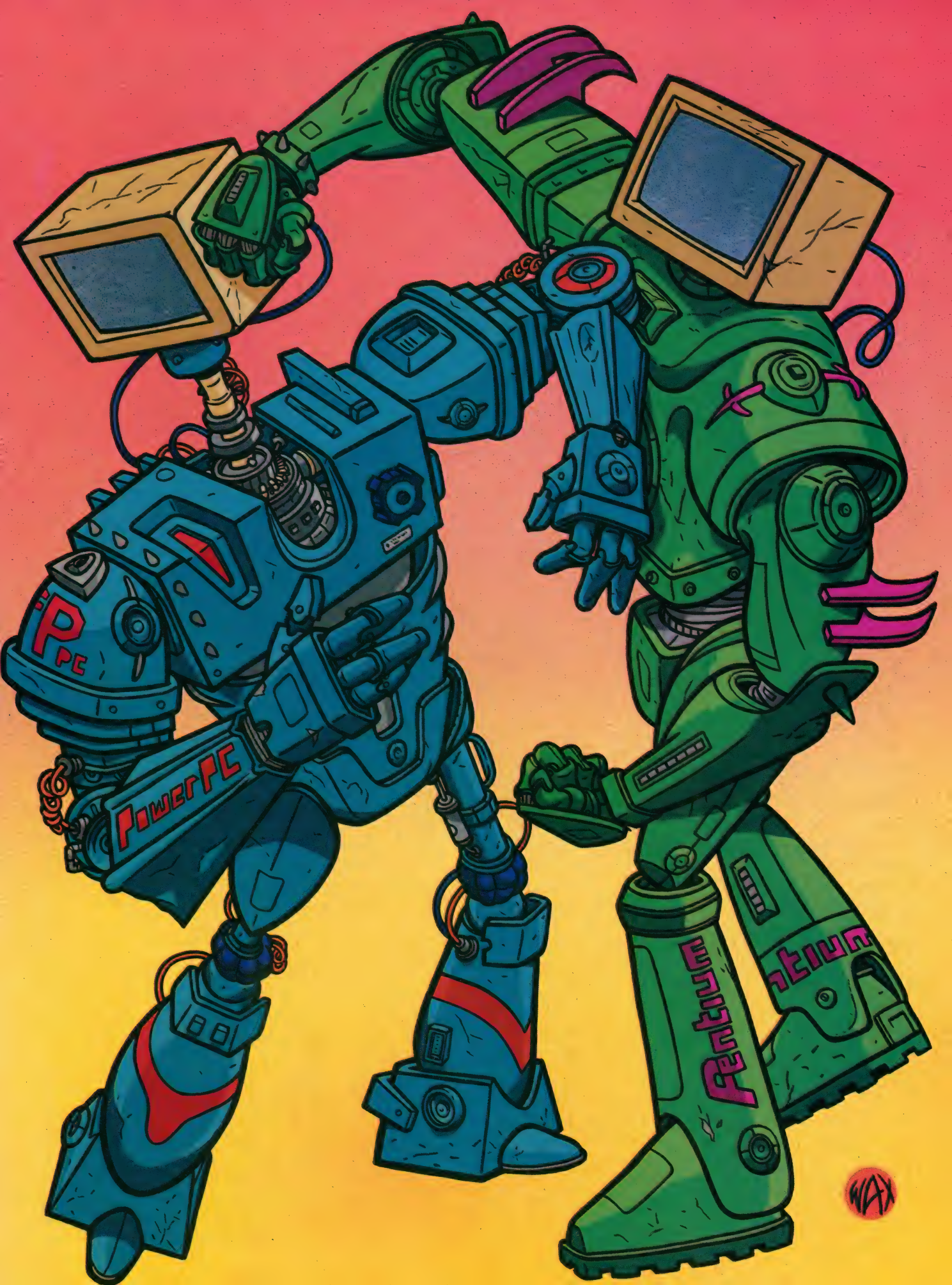
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POWER P.C. VS. PENTIUM

BY ROBERT LAURISTON

IF YOU'VE FLIPPED THROUGH A COMPUTER MAGAZINE IN THE PAST YEAR — HECK, IF YOU'VE WATCHED TV IN THE PAST YEAR — YOU'VE PROBABLY SEEN THE ATTACK ADS APPLE AND INTEL HAVE BEEN THROWING AT EACH OTHER. EACH SAYS THEIR NEW CPU — APPLE'S POWERPC, INTEL'S PENTIUM — DOES EVERYTHING THE OTHER CAN AND MORE, AND DOES IT FASTER, CHEAPER, AND BETTER. WHAT'S THE BEMUSED CONSUMER IN THE MIDDLE OF THIS MUDSLINGING MATCH SUPPOSED TO THINK? ■ TO UNCOVER THE REALITY UNDER THE HEAP OF HYPE — AND TO FIND OUT WHAT

ILLUSTRATION BY STEVE WACKSMAN

that reality means for musicians — we spoke with major vendors of MIDI and digital audio hardware and software on both sides of the Mac/Windows fence. The truth is, naturally, a little more complicated than what you see in the ads. Both these new CPUs are fast, but each is faster at some things and slower at others. Depending on how you use your computer, buying either might be a mistake — at least this year.

Before we get down to cases, here's one general tip: If you just do straight MIDI sequencing work, not digital audio or notation, there are better places to spend your money than on a cutting-edge CPU. Just running a sequencer won't make a 486 PC or a Mac Quadra break a sweat.

POWERPC AND POWERMACS: NOT READY TO JAM

From Apple's ads, you might get the impression that the PowerPC is the universal computer. Let's dispel that one right away. Configured with 16Mb of RAM and a copy of SoftWindows, the new PowerMacs can run *some* DOS and Windows software almost as fast as a 486SX/20 PC. That's a big improvement over older Macs, which ran PC software slower than the pokiest old 286, but it's still a lot slower than entry-level 486SX/33s — which cost about half of what a Windows-capable PowerMac does. Moreover, PowerMacs currently can't run Windows MIDI or digital audio software at all, or take PC add-in boards. You want Windows, stick with a PC.

Another source of confusion in the ads is this business about "native" software. Apple claims that PowerMacs will run applications two to ten times faster than a Quadra, but that's only if the app has been "accelerated" for PowerPC. To understand what they're talking about, let's take a quick look at how the PowerMacs work.

Previous Macs were all built around Motorola's 68000 family of CPUs. The 68000 was used in all Macs up to the SE, the 68020 in the first Mac II, the 68030 in later Mac IIs, and the 68040 and 68LC040 in the Quadras. Since each new CPU was very backward-compatible with its predecessors, it wasn't too difficult for software vendors to adapt their applications as the Mac evolved.

In a radical break with that tradition, the PowerMacs are built around the new PowerPC CPU family being developed jointly by Motorola, IBM, and Apple. The good news is that the first member of that family, IBM's PPC601 (used in all current PowerMacs), is much faster than the 68040. The bad news is that the 601 is not the least bit backward-

POWERMAC UPGRADE OPTIONS

The following is a list of the 68040-to-PowerMac upgrade options Apple is currently offering. The company has announced that some sort of upgrade option (probably a card) will be available for the LC/Performa 475, 476, 550, and 575 and Quadra 605, but no details were available at press time.

The upgrade card costs $700, and uses your existing RAM. Your upgraded computer won't be as fast as a PowerPC, since the 68040 logic board isn't as fast as one specifically designed for the chip, and (in some cases) the CPU runs slower. (Note that the 610, 650, and 800 can be upgraded by either an upgrade card or a logic board swap.)

The logic-board swaps cost around $1,000, $1,500, and $1,900 (including installation and 8Mb RAM). The PowerMacs use 72-pin 80ns SIMMs, so you can transplant memory only if your current Mac uses the same type, rather than the old-style 30-pin SIMMs. Check with the vendors to see if your NuBus boards will work after a logic-board upgrade. ■

80MHz 3-slot logic board	Quadra 800, 840AV
66MHz 3-slot logic board	IIvx, IIvi, Performa 600
Quadra/Centris 650	
60MHz 1-slot logic board	Quadra/Centris 610
660AV	
upgrade card (runs at 66MHz)	Quadra 650, 800, 950
upgrade card (runs at 50MHz)	Quadra 610, 700, 900
Centris 650	
upgrade card (runs at 40MHz)	Centris 610

THE PCI BUS

PCI is a new expansion-board bus standard that has been widely adopted in the computer industry. (PCI was originally developed by Intel, but it's now controlled by an industry committee that includes some of Intel's biggest competitors, such as AMD and IBM.) Most of the Pentium systems on the market have two or three PCI slots. While the first round of PowerMacs still use NuBus, the second generation will use PCI, and rumor has it that Apple may ship a system with six PCI slots as soon as January.

The bus has several important advantages. Its 64-bit data path matches the PowerPC and the Pentium (NuBus and VL-Bus have 32-bit data paths, like the 68040 and 486). PCI's theoretical maximum data capacity is around 250 megabytes a second — twice that of most VL-Bus setups, and at least six times that of NuBus. PCI *may* even allow you to use the same boards in PCs and Macs, though there are rumors that Apple may reject the plug-and-play standard being adopted in the PC market, which would mean the two platforms would still be incompatible. PCI would still eliminate most of the current trouble and expense involved in adapting PC boards to the Mac and vice-versa.

This is all very interesting, but at the moment quite theoretical. You could buy a Pentium with PCI video, drive, or network adapters, but that's about it. From the musician's perspective, PCI's suitability for digital audio is unknown. None of the vendors we spoke with had anything substantive to say about it yet, and we probably won't see any relevant boards before the middle of next year at the earliest. ■

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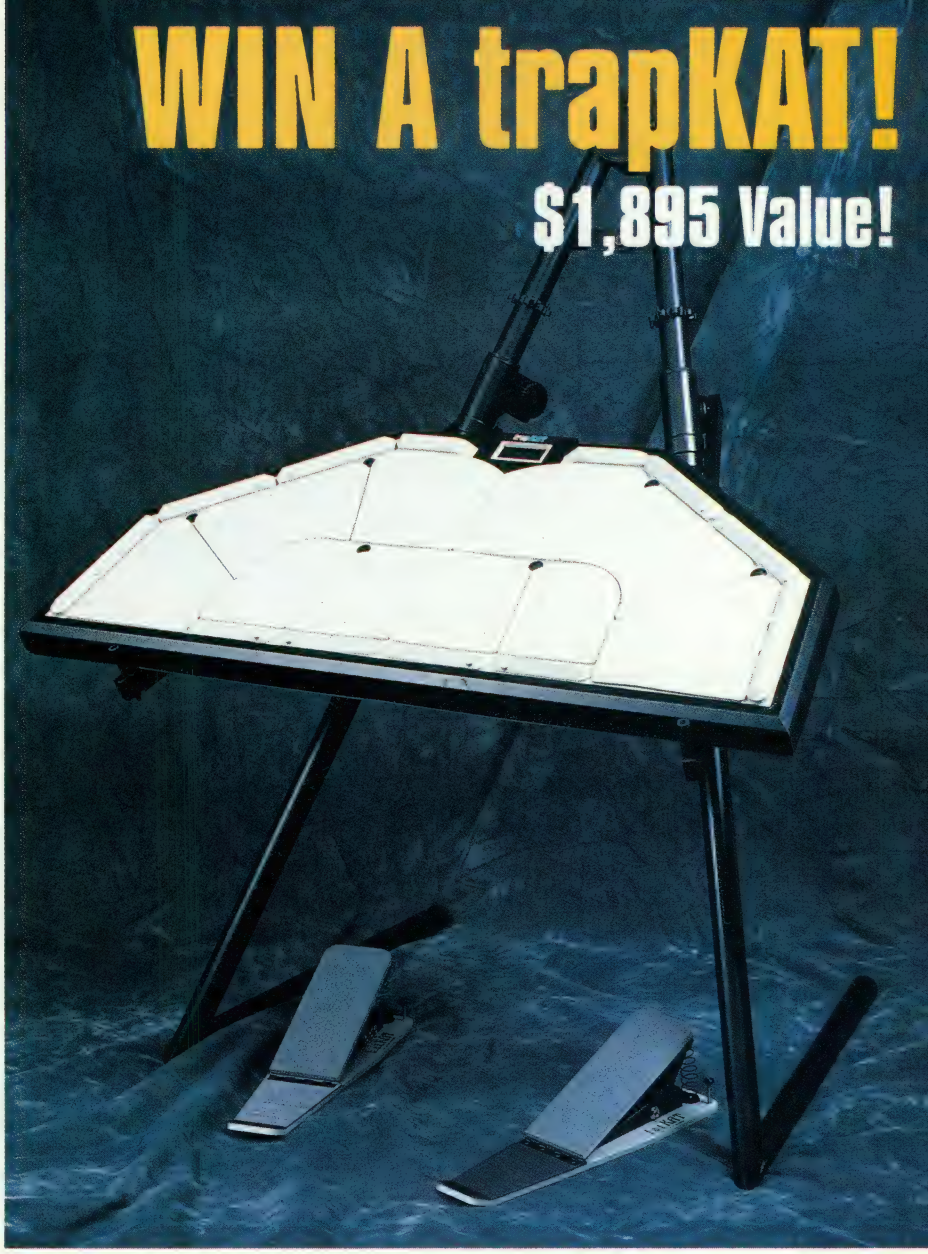

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compatible with the 68040, which means it can't run any of the old software, and it would be a massive undertaking for vendors to adapt their applications to the new chip.

To get around this obstacle, Apple wrote a complex utility that allows the 601 to "emulate" a 68LC040, and they built this emulator into the PowerMacs' ROMs. Run a "native" app (one written specifically for the PowerPC) on a PowerMac, and the app knows it's running on a PPC601; run an older Mac program, and the app thinks it's running on a Mac II. This dual-personality approach doesn't make PowerMacs 100% backward-compatible, but they're very close.

The gotcha in this scheme is that a PowerPC emulating a 68LC040 is seldom as fast as a real 68LC040. Performance varies a lot from one program to another, but as Mark of the Unicorn's Daniel Rose notes, "Many applications," including those made by MOTU, "run faster on a Quadra 950 than in emulation mode on a PowerPC. If your primary apps aren't native, get a 650 or an 840AV that you can upgrade later." While native versions of popular mainstream and graphics software such as Word, Excel, Photoshop, Freehand, and QuarkXpress should be out by the time you read this, most Mac music software won't go native until sometime next year. What if you run a mix of old and native apps? Rose points out that there's no easy answer. "If a customer calls and says, 'I do Photoshop and I do Performer,' it's hard to know what to say. It's a tough decision that may involve compromise: You'll have to determine which apps you use most, and when they may — or may not — be available in native versions."

"For high-end pros who must have stuff that works, we're suggesting they not go to PowerMacs quite yet," says Opcode's Paul de Benedictus. "That will probably change by the end of the year. It's not that we have to do native code to make our software work, but simply a matter of straightening out some incompatibilities with serial ports, the way the new system software works, and so on. For home-studio types who might be satisfied with the on-board 16-bit audio in the PowerMacs, we ought to have Studio Vision AV out for PowerMacs by September or October. We think it'll do eight tracks on an 8100, probably four and six on 6100 and 7100, but we really don't know yet. It's not pro-level, but it's still a heck of a lot better than a multitrack cassette deck."

There are several other reasons for musicians to take a wait-and-see attitude toward PowerMacs. As Digidesign's Rob Curry notes, some crucial parts of System 7 are still old

code. "The I/O system, Sound Manager, MIDI Manager, QuickTime, and interrupt routines — where a lot of real-time work gets done — are non-native code." Since it takes a PowerMac a fixed number of instructions to switch from native mode to 68040 emulation to run the old-code portions of System 7, "That introduces significant delays, so it's currently faster to run real-time apps in emulation. Sometime within the next year you'll probably see improvements, after Apple takes more of the Toolbox native."

OSC's Josh Rosen described the transitional period as a "living hell." "Right now, you're definitely better off with an 840AV or a 950," says Rosen. "There are some big problems with the new machines — the only reason I bought a 7100 was to annoy myself enough to force our internal development team to fix everything. Though I have faith Opcode will get it fixed quickly, we've had a lot of trouble using OMS with multi-port interfaces like Opcode's Studio 5 and MOTU's MIDI Time Piece.

"There are no PowerMacs with enough slots," Rosen continues (the entry-level 6100 has one NuBus slot, the 7100 and 8100 three each), "and they don't support Digidesign's expansion chassis. SampleCell doesn't work. Deck works okay with Pro Tools, but has problems with add-on software." Rosen is skeptical about whether these problems will all get fixed for first-generation PowerMacs. "What's the manufacturers' interest in fixing up NuBus products for the last of the NuBus machines when they have to switch over to PCI?" (See sidebar, page 64.)

If you're using an AV Mac with OSC's Deck or Alaska's Digitrax, you've got yet another reason to stay put: The AV PowerMacs have no DSP chip, so even when native versions of these apps are available they won't work quite as well as the current versions. For example, while the native version of Deck will probably be able to do six (or posssibly even eight) channels of audio on the 8100, as it can on the 840AV, it won't be able to do the smooth 24-bit fades and stereo pans the DSP allows.

As for Apple's claims that the PowerPC makes a DSP unnecessary, none of the vendors we talked with agreed. "That's totally bogus; we all know it," says Rosen. "One super-fast processor will never do the same thing as two medium-fast processors. It's always better to have another one to do dedicated processing for real-time applications." Digidesign's Curry agrees. "In real-time sys-

tems, it's much better to have a lot of slow processors than one fast processor."

There are rumors going around that Apple is working on a DSP board for the PowerMacs, but the company had no comment. Software developers were enthusiastic about the idea. While Emagic's Mikail Graham told us the company has been successfully demoing Logic Audio 2.0 on a PowerMac 7100 with a Digidesign Session 8 board, "the PowerPC will make sense for our customers when there's a full solution with a DSP for four to eight tracks of digital audio." OSC's Rosen was even more upbeat. "Depending on the speed of the DSP, you could do as many as 12 tracks. Then you could just add inexpensive S/PDIF digital audio jacks, like on the Silicon Graphics Indy, and use your DAT for I/O."

PENTIUM: MORE OF THE SAME

While from a technical standpoint there are all sorts of innovations in Intel's Pentium chip, as a practical matter it works exactly like a 486 — only faster. From all reports it's 100% backward-compatible with the 486 and 386. "Pentium-optimized" applications (created by recompiling the software with a Pentium-aware compiler) are starting to show up, and they run faster than unoptimized code on 486s as well.

For most tasks, a 60MHz Pentium won't be significantly faster than a 100MHz 486DX4. The exceptions are for apps that do a lot of floating-point calculations. In these cases the Pentium will give a massive speed boost. We haven't heard of any music apps doing heavy floating-point calculations — it's mostly a concern when running pro-level graphics programs, such as AutoCAD, Freehand, or Photoshop, or when doing extremely heavy number-crunching with apps like MathCAD or Mathematica.

The 90 and 100MHz Pentiums will run Windows as fast as possible. The only question is whether you really need that level of performance. For straight MIDI, you don't — an entry-level 486 is more than adequate. For digital audio or notation . . . maybe. Ask your software vendor what they recommend before you blow your wad. Turtle Beach's Roy Smith was the only vendor we found who wasn't ambivalent about the 486/Pentium choice. "You should always stay at least one step behind the bleeding edge — but I wouldn't buy a 486 system unless it was dirt cheap and you just want it for a specific purpose. Pentium is better and it's not much more money." ■

Robert Lauriston is a freelance writer and contributor to both the PC Bible and The Mac Bible.

LETTERS

Continued from page 6

Myst CD. No muss, no fuss, and everything worked perfectly.

John Perkins
Encino, CA

Did Jim Aikin crawl inside my motherboard and take notes? I spent five long days incorporating a CD-ROM and Soundblaster sound card into my system just days before picking up the July '94 issue and reading his Guest Editorial. Boy, could I relate to Jim's experience. Besides spending enough money for a second PC, I'm waiting in terror for the phone bill, what with all the calls I made to various technical hot lines for help. I think I'll wait 'til next month's issue before I venture out to buy more gear.

Doug van der Weyde
Gardena, CA

Jim Aikin's experience is so typical in the PC clone world. I'm not a Mac advocate *per se*, but I'll risk the wrath of your readers by suggesting that an IBMer would be terribly surprised if everything worked okay on the first try. If one is willing to put up with inconveniences, one deserves to put up with inconveniences.

Bruce Bigenho
Santa Barbara, CA

It would be fruitless to hope that no one would suggest the obvious, so I will: Hey, Jim! Get a Mac!

Jeff Norberry
Peaks Island, ME

[Jim Aikin replies: "I own both a Mac and a PC. As it happens, I bought the Mac several years ago. It's an SE/30, which is great for sequencing, patch storage, word processing, and even some Mac games like Tetris *and* Three in 3*, but the tiny black-and-white screen is not so good for multimedia. The PC was acquired much more recently, for recording digital audio with Digidesign's Session 8 system (this was when Session 8 first came out — long before the Mac version appeared, or I might have reconsidered my choice). The PC is a 486 with a Super-VGA monitor, and is fully capable of running multimedia applications, provided you're willing to go through the sort of contortions described in the Guest Editorial. If I were buying a new computer specifically*

Continued on page 110

BEFORE

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After

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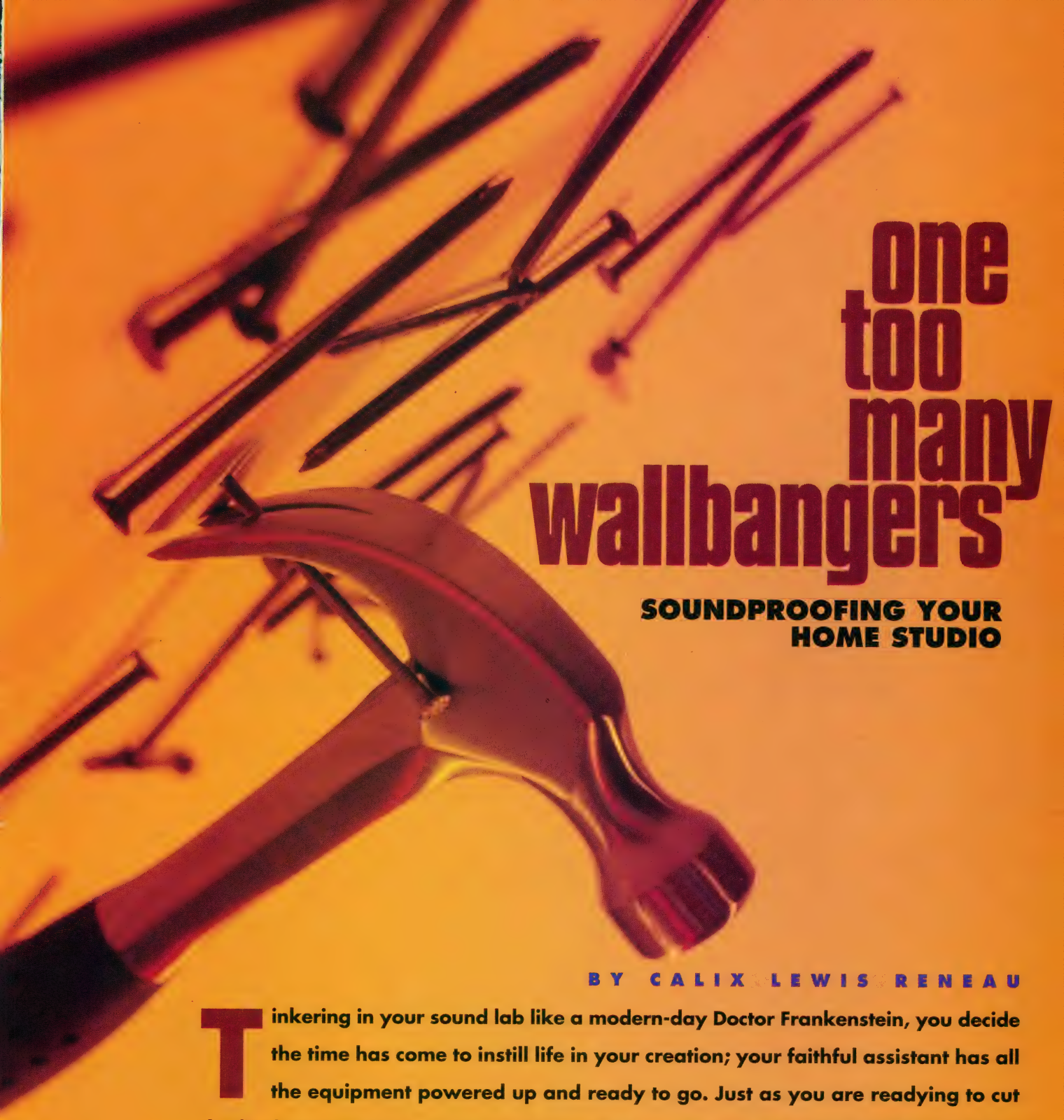

one too many wallbangers

SOUNDPROOFING YOUR HOME STUDIO

BY CALIX LEWIS RENEAU

Tinkering in your sound lab like a modern-day Doctor Frankenstein, you decide the time has come to instill life in your creation; your faithful assistant has all the equipment powered up and ready to go. Just as you are readying to cut the final mixdown of your musical monster, Igor answers a knock at the door. It's the gendarmes, summoned by the neighbors who don't fully appreciate the 700 passes it took to get the perfect mix. Not that it matters: On the last listen, you noticed a glitch in your carefully sampled recreation of a falsetto voice mixed in with another, less elegant body noise. The rumble of a passing truck has been layered underneath, obviously picked up when you originally recorded the samples. You go to bed early. >>

PHOTOGRAPHY BY BARRY MUNIZ

Cubase Audio for Macintosh
Editors' Choice
Electronic Musician
January 1994

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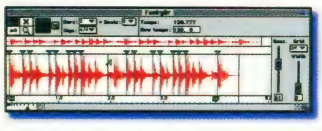

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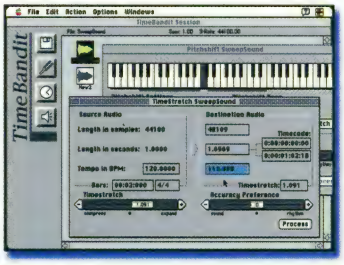
TimeBandit is *the* **Time and Pitch correction** program for Mac. Version 1.5 now supports SoundDesigner 1/2 and AIFF files, sports a new user interface, and can be accessed directly from Cubase Audio. Soon to be a **native Power PC** program. Hear it to believe it. The audio quality is unparalleled at any price!



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ONE PERSON'S MUSIC IS ANOTHER person's noise. Now that digital audio recording has found (or is planning to find) it's way into your home and your computer, you're probably discovering that a noise floor once acceptable on your old cassette mixdowns isn't good enough for DAT mastering. Noise control is more crucial at every step in the recording chain, from source to effects, and mixers on down to tape.

Environmental noise is an important factor. Even if you're not using any microphones in recording, glitches that once were hidden in the analog warmth of your cassette multitrack now stick out in the pristine glare of digital playback, that is, if you can hear them above the roar of the jet airliner passing overhead. Take control of your art by controlling your noise — both the stuff you make that annoys your neighbors and the sounds they make to annoy you right back. Examining a case study in soundproofing might help you best decide how to fight unwanted noise.

ONE MUSICIAN'S DREAM. Ron Hagadone is an accomplished guitarist working in the L.A. area. To accommodate his growing scoring business and teaching schedule, he decided to build a small studio for rehearsals, jams, and his MIDI setup. Naturally this was going to be difficult to do in his small efficiency apartment (read: one room and a bath). While looking into the cost of renting a "lock-out" (a permanent space in an existing rehearsal building) and other possibilities, Hagadone was offered an opportunity to sublet half of a 600 square foot office space in an industrial park. The rent was right, and his challenge was to figure out a way to keep from hearing his neighbors and to keep his neighbors from hearing him. Since Hagadone works in construction, he had the confidence to estimate the materials needed and their cost. He then looked at the credit left on his various charge cards (in the grand Hollywood tradition), and decided to go for it.

The room was typical for an industrial/office setting. A large warehouse with a high ceiling had been carved into several small offices with aluminum stud walls, minimal insulation, and thin layers of sheet rock — none of which adds up to effective soundproofing. Even with the addition of the ubiquitous hanging acoustic ceiling, he could hear the muffled phone conversations in the office next door. Hagadone was concerned that his business neighbors might not appreciate the dulcet tones of practicing bands, fledgling guitar students, and late-night scoring sessions.

Enter Marshall Long, a mainstay of the acoustical engineering world in Southern California. Long has an impressive list of credentials, including a Ph.D. in acoustical engineering from UCLA. He has run his own acoustical engineering consulting firm since 1971. Long has worked on thousands of acoustical installations, from small studios, soundstages, concert halls, high school auditoriums, and film theaters to Disney theme parks. Long spent several hours consulting with Hagadone, revealing some of the secrets of acoustic design and remodeling.

"There are three approaches to reducing noise," Long explained. "First, you can increase the mass of a partition. The second way is to add distance between the two sides of a partition, which would have insulation in the space between them. Third, decouple vibrationally the sides of a partition — that is, isolate the materials so they don't transmit vibrations to each other."

Hagadone began with a trip to his local library. Many of his design choices made were drawn from *How to Build a Small Budget Recording Studio*, by F. Alton Everest and Mike Shea (TAB Books). For the fundamentals, Long also recommends *Building a Recording Studio*, by Jeff Cooper [Synergy].

Hagadone then took stock of his resources. Three hundred square feet is not much room

Fig. 1. Ceiling construction. The acoustical tile and grid is removed and a 2"x8" ceiling is installed with insulation. Note the metal channel running across the joists; the sheet rock attaches directly to this, acoustically decoupling it from the ceiling.

Fig. 2. Wall in progress. From left to right: A staggered stud wall is erected and filled with insulation. Then resilient channel is added, and sheet rock attached to it. Note the resilient channel around the door opening to support the sheet rock there as well.

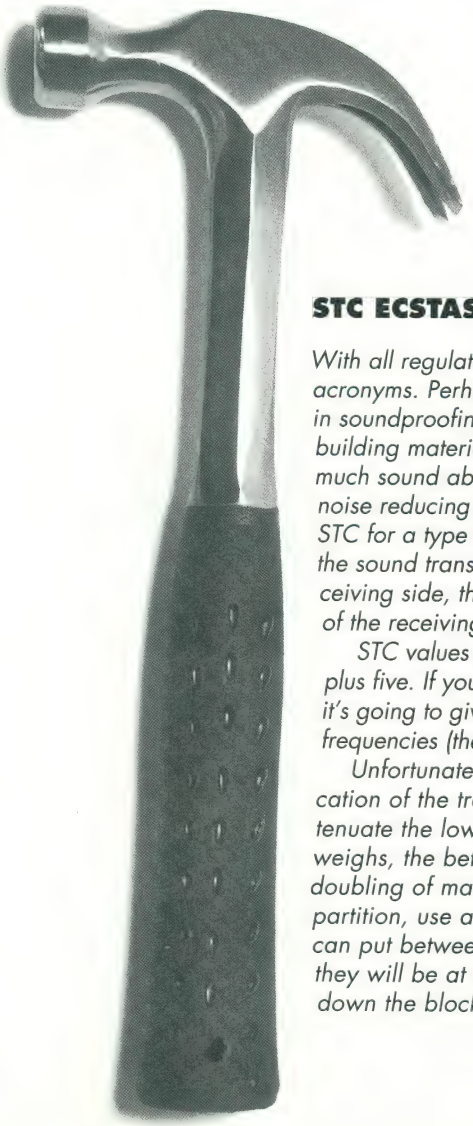


PHOTO: ERIKA WORTH

STC ECSTASY

With all regulated activities comes an alphabet soup of acronyms. Perhaps the most important one you'll encounter in soundproofing is Sound Transmission Class (STC). Most building materials have an STC rating that indicates how much sound absorption they will contribute to the overall noise reducing capabilities of a wall, floor, or ceiling. The STC for a type of material or partition takes into account the sound transmission loss from the source side to the receiving side, the area of the partition, and the absorption of the receiving room.

STC values roughly represent sound absorption in dB, plus five. If you have a door that's rated at STC 30, then it's going to give you about a 25dB drop in high- and mid-frequencies (the speech bands) from one side to the other.

Unfortunately, an STC rating gives no accurate indication of the transmission loss of low frequencies. To attenuate the low end, stick with the mass law: The more it weighs, the better off you are — roughly 6dB for every doubling of mass. If you can't increase the mass of your partition, use a double partition. The more space you can put between the two partitions, the more effective they will be at keeping your bass from rattling china down the block. ■

Fig. 3. Door jamb with isolated layers of construction. The separated stud wall and resilient channel ensure minimal sound transmission.

Fig. 4. Entrance doors, hung on opposite sides of the jamb to prevent knob-mashing. Hanging two doors required a thicker frame.

to work with. He wanted to have some storage behind the main studio area, so he divided his space into two parts. The main room, where all the noise would be made, would be 16' by 16'. The remaining three feet between this room and the next office would be used for storage. As this was a corner office, the other two walls were exterior walls. Altogether, two interior walls and a ceiling needed to be built inside the room, a variation on the room-in-a-room concept. The top of the ceiling was to be covered with plywood, giving more storage area, and the original acoustical tile ceiling was to be removed.

How much work exterior walls need depends on the degree of outside noise, the degree of inside noise, how far away the neighbors are, and the construction of the wall. One wall was of 4" poured concrete slab, which Long figured would absorb about 50dB of sound energy. That plus the distance to the neighbors made for a fairly effective sound barrier. Most homes don't have slab concrete walls, though; the closest common material would be cinder block, which is often used in basements and foundations. An unpainted cinder block wall is good for absorbing 20 to 30% of the sound (relatively high for most building materials).

The other exterior wall consisted of stucco lath applied to 2"x4" studs, insulation, and sheet rock; a much more common construction. If the stucco is 7/8", you can count on an STC rating (see sidebar, page 75) of 48 or 49, almost as good as the 4" concrete slab. The base STC will be lower for masonite siding, and higher for brick.

The exterior walls being satisfactory, Hagadone turned his attention to the acoustically inadequate inside walls. He decided to take a hybrid approach by building two new walls for a kind of "room within a room." The two walls created a large space between the studio itself and the common walls in the building, which became, in effect, an acoustical insulator.

Following Long's third approach to noise reduction, Hagadone built his walls using a staggered stud layout. Most walls are stick-framed with 2"x4" studs, with a surface material, usually sheet rock, attached to both sides. This is a quick and simple way to build a wall, but it couples the two sides of the partition together, which allows sound to be transmitted through the wall. A standard insulated single stud wall has an STC of around 40.

For his staggered stud approach, Hagadone chose to widen the wall with 2"x6" lumber on the top and bottom (called "plates"): 2"x3" studs were alternated every foot, so that each wall covering (in this case sheet rock) was hung on

PHOTO: ERIKA WORTH

its own framework, with no solid material except the top and bottom plates connecting the two. This brought the STC up to 46.

Another approach would be to build essentially two separate walls, called a double stud wall, where the top and bottom plates are separate. This yields an STC of 53 or higher, if the space between the two stud walls is increased. The construction costs are higher as well, as is the space required.

Another common approach to separating partition surfaces is to use resilient channel, a metal strip about three inches wide and shaped like a folded-out "Z." One side attaches to the stud wall, and the other attaches to the surface material. This thin metal band holds the surface material about 1/2" away from the studs, physically isolating the two sides of the partition — if it's used correctly.

"Resilient channel is useful, but not enormously effective," cautions Long. "It does give you about 5dB of additional sound transmission loss. If the wall is already vibrationally decoupled [staggered stud or separated/double stud], there's no point in using it. Normally, if you put it on a wall, you mount it with the open side facing up, so that the weight of the drywall pulls the resilient channel away from the wall. Mount it upside down and the weight of the sheet rock will pull the "Z" straight, reducing its effectiveness. Another way to misuse it is to use too long of a screw, connecting the drywall to the stud behind the resilient channel."

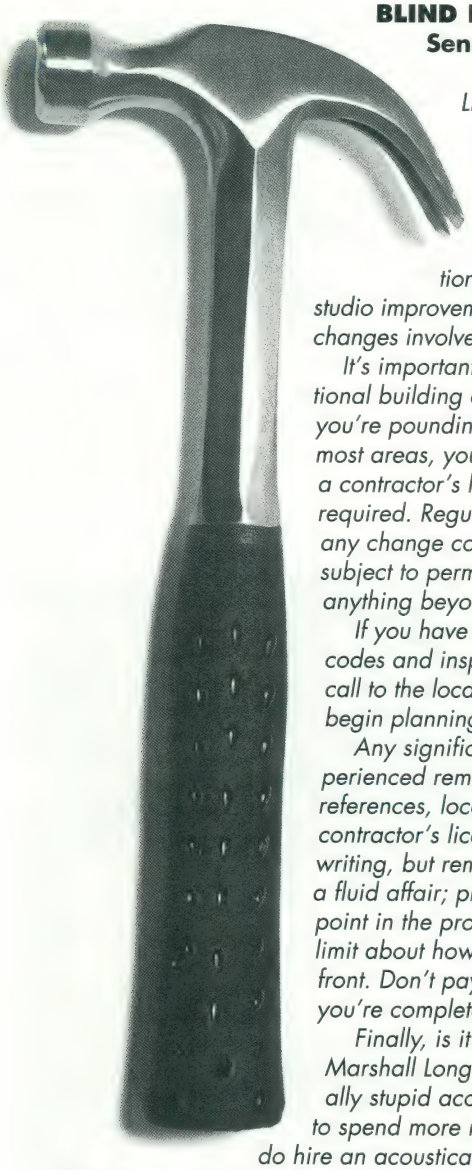
Hagadone finished off the walls in sheet rock. For good measure, excess sheet rock mud was splattered in big random lumps on the inside of the wall side of the exterior sheet rock in hopes of increasing the mass of the partition and randomly changing the resonance of the sheet rock.

THE DARN HUMAN FACTOR. Acoustic isolation and noise reduction would be much easier if sound was the only thing going on in a studio. But we have to get electricity, audio, air, light, gear, and the occasional musician in and out. Every hole punched in a partition reduces the effectiveness of the acoustic isolation. Once you've compromised as little as 10% of your surface area, you've effectively lost the partition as a sound barrier.

Hagadone ran three separate electrical circuits into the room, two for outlets and one for lighting. This allows for some electrical separation of troublesome components, which often causes electrically induced noise. The wiring was run inside flexible conduit.

Many people use metallic conduit itself as a grounding path. For safety and noise considerations, it is vital that this path be maintained from the device back to the grounding point. Since the physical connections of flex conduit are not foolproof, this is not the best grounding choice for musical applications. Instead, a separate green wire ground should be installed for all of the outlets in your studio. This ground *must* be run in accordance to code (which generally requires running the wire all the way back to the grounding termination at the panel) in order to be safe and legal. If you have any doubts at all about your electrical ground, hire an electrician to make sure that all of your wiring is up to code.

The metal outlet boxes Hagadone used came punched full of holes, which he sealed with duct tape in hopes of reducing the noise transmission through these holes. "That probably won't do very much," laughed Long. "All that matters is the mass, and duct tape doesn't weigh very much. If you're really concerned about boxes in a shared wall, you can back plaster them, or wrap them in clay pads. One thing you don't want to do is stuff the box with



BLIND BUT NOT DEAF: The Law, Common Sense, and Home Studio Construction

Living in this country, we often find that we are protected from ourselves. If you want to do it, there's a law regulating it, and home improvement is certainly no exception. Even if you decide to plan, build, and complete the work by yourself, you'll need to get construction permits and inspections so that your home studio improvements will be legal, especially if any of the changes involve electrical or structural modifications.

It's important that all work adhere to local, state, and national building codes. A curious inspector driving by while you're pounding nails could lead to expensive trouble. In most areas, you can make extensive modifications without a contractor's license, but permits and inspections are still required. Regulations vary from place to place, but usually any change costing over two or three hundred dollars is subject to permit and inspection, which means just about anything beyond hanging new window shades.

If you have any doubt whether your project is subject to codes and inspections, chances are it is. It's worth a phone call to the local building inspector to find out before you begin planning, and certainly before construction begins.

Any significant remodeling is worth bringing in an experienced remodeling contractor. Before you hire, check references, local business or review boards, and the state contractor's licensing board. Get cost and time estimates in writing, but remember that home or studio improvement is a fluid affair; problems and changes can develop at any point in the process. In most cases there is a percentage limit about how much money a contractor can request up front. Don't pay the final balance until the job is done and you're completely satisfied with all the work.

Finally, is it worth bringing in an acoustical engineer? Marshall Long thinks it could be. "If you do something really stupid acoustically," he warns, "you're going to have to spend more money tearing it down and redoing it. If you do hire an acoustical engineer, make sure he or she understands what you want to accomplish and what problems you expect to solve. We've had to deal with situations created by award-winning designers who didn't recognize and solve the acoustical problems the first time."

The nicely soundproofed room described in this article is still standing today by virtue of the fact that construction followed all applicable building codes. Many adjacent buildings and the construction office that shared the space were severely damaged by the January 15 Los Angeles earthquake, yet the only damage to the room was that the ceiling pulled away from the wall. Had the construction not been so conscientious, that ceiling might very well have merged with the floor. Ensure that all construction and remodeling work is done according to the letter of the law. Things are much less likely to tumble down around your ears that way.

anything; it's a violation of code and dangerous, to boot. The most common problem is where the hole in the wall is cut bigger than the box. To fix this, take off the cover plate, fill the opening between the drywall and the box with drywall compound, and put the plate back on."

Most building codes stipulate a means by which the humans inside a room can breathe and be comfortable. Unfortunately, heating, ventilation, and air conditioning systems (HVAC) can generate a lot of noise, usually from three different sources. First is the fan noise transmitted down the supply or return duct from the unit itself. Then there is turbulent noise generated by the motion of the air; that generally occurs due to excess velocities in the duct itself or in the diffuser (the grille through which the air passes into the room). The third source is vibrationally transmitted noise from an HVAC unit that isn't properly isolated.

Hagadone chose a simple solution: He sealed the air duct into his workspace. This is likely in violation of code, (see sidebar on page 79) but if comfort becomes an issue, he plans to install a trap door, allowing him to open and close the duct as needed.

Legitimate solutions vary depending on the problem. In a small studio, a silencer and lined duct may provide enough protection from HVAC noise. A silencer is an in-line device for the ductwork that can take from three to seven or more feet of room and cost about $100. Custom silencers are available, but with increased space efficiency comes added expense. For turbulent noise, it's a matter of slowing the airflow down by making the ducts, grilles, and diffusers big enough.

As is the case with most commercial buildings, Hagadone's room did not have ducted returns. Instead, the building used a plenum return; that is, the entire space above the drop ceiling is the air return, shared with all other rooms and separated only by an inefficient acoustic tile drop-ceiling. Hagadone was fortunate to have a firewall break above where his studio wall would be, so that he was separated from the rest of the building by this bulkhead. He built a separate ceiling on top of the

Continued on page 118

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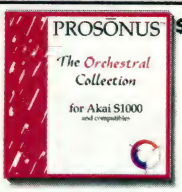

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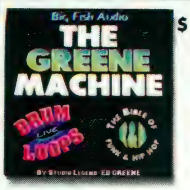

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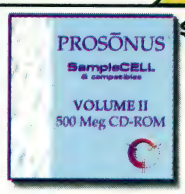

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Ah, decisions, decisions. You want to buy a new multitrack recorder, and you want to go digital so that you'll get the best possible sound quality. And you'd like to buy a hard disk recorder, rather than tape, so you can get random access editing power. And finally, it's got to be something you can really afford. But there's a problem.... don't all hard disk systems require expensive add-in hardware and software, to already expensive computers? Not anymore!

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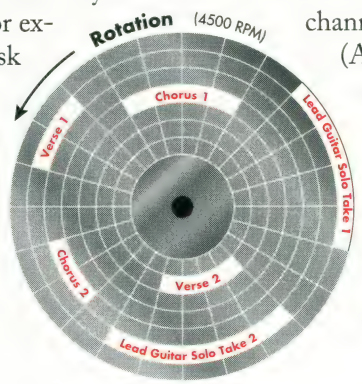
The DR4d can record up to four tracks simultaneously to standard SCSI hard disks, either internal or external drives. An optional 213MB internal disk offers 40 track minutes of recording (44.1kHz) right out of the box. To expand your recording time, simply connect external drives to the DR4d's supplied SCSI port.

With standard tape machine-style controls the DR4d is by far the easiest hard disk recorder to operate, which means that you can get to work immediately creating music rather than setting up and operating a computer system. Punch ins/outs can be performed manually or automatically from the front panel, or by footswitch, naturally.

Now you can start to take advantage of random access editing. You can cut, copy, and paste sections of audio with ease. Our Jog/Shuttle wheel lets you scrub through the audio at various speeds, forwards or backwards. Try out different arrangements. Create perfect tracks by combining the best sections from multiple takes. And you can edit with confidence, because if you change your mind you can instantly Undo your last edit - even after the power is turned off and on again! Imagine it. Do it. It's that simple.



On a spinning hard disk, the sections of music can be accessed almost instantaneously by the moving heads of the drive mechanism. This allows you to seamlessly output parts regardless of their location on the disk. Also, music can be easily rearranged in ways not possible with tape.

You can instantly move to 108 memorized locations at the touch of a button, and these locate points may be entered manually or on-the-fly. It's also simple to set up **seamlessly looping** repeat sections, so it's easy to jam over tracks. No more wasting time on rewinding tape!

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And best of all, the DR4d is an **affordable** reality: suggested list is only $2495.00 (or $1995.00 w/o hard disk)! Multitrack disk recording *is* within your reach, so see your Akai dealer today for a complete demo!

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On tape, the sections of music are physically located far from each other, separated by many feet of the tape itself. Since you have to move all that tape past the heads to get where you want to go, it's impossible to jump instantly from one section to another. It wastes time, and limits creativity!

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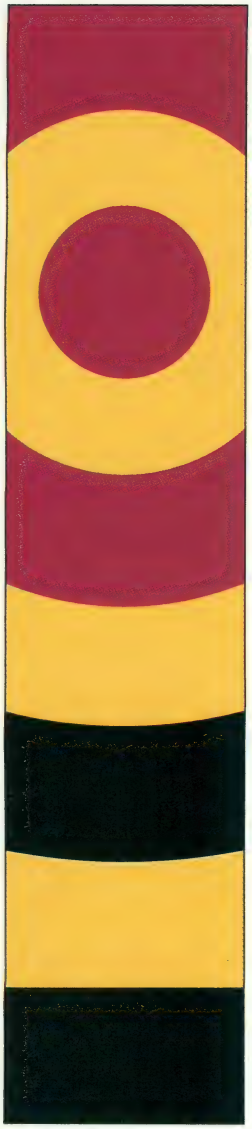
FOURTEEN HOT TIPS

SAMPLE, NOT SIMPLE

HOW TO GET MORE MUSIC FROM ALMOST ANY SOUND



SAMPLE CDS AND FACTORY SAMPLES ARE wonderful, but there's one drawback: They're wonderful not just for you, but for a few thousand other people. You don't have to sound like everyone else, though, because most samplers give you a lot of ways to mess with the sound — ways that all too often are left unexploited. In this article we'll explore some of the tricks you can perform to make store-bought samples uniquely your own. Some of the techniques we'll cover will be old news to anybody who is familiar with synthesizer programming, but we'll talk about a few others that even the experts may not have considered. [*Ed. Note: For more on getting the most out of your sampler, see the* Keyboard *Sound Design column, which*

BY CRAIG ANDERTON

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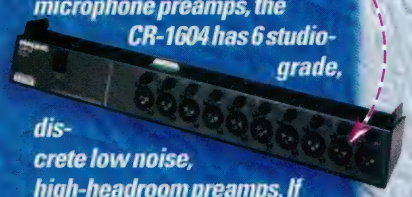

ROTATE IT: $25* Not shown: The RotoPod bracket. It rotates the CR-1604's jack panel onto the same plane as the mixer's controls. Cool huh?

Six **AUX sends** per channel, **3-band EQ** at musically useful points, stereo **solo in-place**, constant power **pan pots** and extra **ALT 3/4** stereo bus.

Sealed **rotary potentiometers** resist dust & liquid.

+12VAC **BNC** lamp connector.

The **CR-1604** ($1099*) is the only compact mixer that can grow along with your **budget** & recording or live performance needs.

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Exclusive **multi-way physical configuration**: Just 7 rack spaces with input/output pod to back; 10 rack spaces as shown; 10 rack spaces when "Rotopodded."

4 stereo (8 mono) **effects returns** with plenty of gain (+15dB above Unity where other mixers stop).

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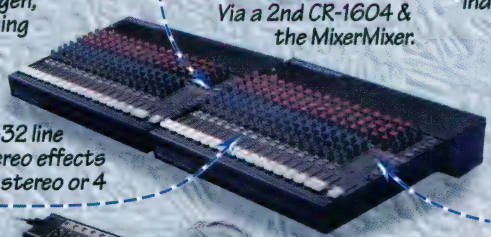
32 CHANNELS!

Via a 2nd CR-1604 & the MixerMixer.



Two CR-1604s give you 20-32 line inputs, 12 mic inputs, 8 stereo effects returns, 16 direct outs & 2 stereo or 4 mono submasters. This is the set-up that remix wizard **Bonzai Jim Caruso** uses to produce top-charted dance mixes for Madonna, George Michael & many others†.

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48 CHANNELS!

Via 3 CR-1604s & the MixerMixer.

Three CR-1604s give you 30-48 line inputs, 18 mic inputs, 12 stereo effects returns, 24 direct outs & 3 stereo or 6 mono submasters. A favorite configuration of LA "power-user" **film and TV scorers** (often with OTTO-1604 MIDI automation) for incidental and theme music on programs such as "The Simpsons," "Baywatch" & "Days of Our Lives.†"

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FOURTEEN HOT TIPS

ran between Jan. '90 and Mar. '92.

Better Dynamics Through Timbre Velocity Tracking. Samples tend to be static; every time you fire one, it sounds exactly the same. But there's plenty you can do with a sampler's synthesizer-style parameters. One of the most effective techniques is modulating the timbre as well as the loudness from velocity.

Lower the filter cutoff somewhat, and assign its modulation source to velocity. Now, low-velocity sounds will be more filtered and sound "darker," while high velocity sounds will be "brighter" and cut more. This doesn't have to be a drastic effect; even a little bit of timbral change gives a more dynamic feel. A more flexible option is to assign filter cutoff to an envelope generator that has velocity-controlled amplitude. Using an envelope can change the timbre over time *(e.g.,* the decay can be more filtered than the attack). By applying a little velocity modulation to envelope decay time, you can also control the shape of the sample dynamically.

Modifying a sample's start point under velocity control can also add dynamics. Set the initial sample start point several milliseconds into the sample, and add *negative* velocity modulation so that higher velocities move the sample start point closer to the beginning of the sample. The interplay of modulation amount and sample start time is crucial; it takes some time to properly tweak this setting. This type of modulation is often used to give high-velocity snare drum and other percussion samples some extra "snap."

Another option, useful with wind instrument samples, is to apply velocity start point modulation in the opposite direction. Set the sample start point to the beginning of the sample and modulate it positively from velocity. Play a soft, breathy tenor sax at low velocity with this patch, and you'll hear the full effect of a slowly blown reed. When you play hard, the sample starts part way into the attack, eliminating some of the breathiness and giving you a more aggressive solo tone.

Finally, you can use a sampler's pitch envelope to give a *very* slight upward "spike" to the pitch, preferably tied to velocity so that only high-velocity hits bring in the pitch change. This works particularly well with plucked string effects (guitar, bass, etc.) since strings naturally go sharp when plucked hard.

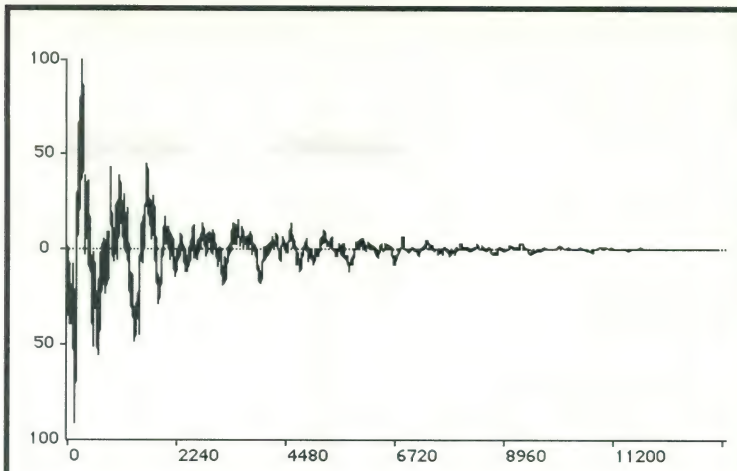


Fig. 1. This kick drum sample has a sharp attack and quickly decays to a low level. It can be compressed using the editing techniques in Figures 2 and 3.

Music Deconstruction Set. Of course, samplers are good for a lot more than playing back notes; you can record and play back entire riffs. One of my favorite tricks is to record guitar overdubs (this also applies to voice, wind instruments, etc.) for a song into a digital tape recorder or hard disk system, and not worry about getting it right — the object is to play as spontaneously and freely as possible. I then transfer the track over to a hard-disk-based editing system, and save all the best bits. These get blasted into a sampler, which allows me to play my coolest guitar riffs right from the keyboard (with a single keyboard note triggering an entire riff) and record the performance into a sequencer. For techno-type music this is great, as you get the rigid mechanical "feel" of sampled sound, but with a very organic-sounding source.

Once you've sampled a whole phrase this way, you can apply a filter modulation that extends over more than one note — for example, modulating the filter from a slow LFO. This type of filter effect (known as single triggering because a group of notes are all triggered by a single note-on) is characteristic of some vintage analog synths, but is difficult to duplicate on newer instruments if each note is a separate sample. Sampling the whole phrase as a single "note" solves the problem.

Synthesizing Stereo Samples. Turning mono samples into stereo by detuning layers and spreading them to opposite sides of the stereo image is a common technique, but it can create compatibility problems when the finished mix is played back in mono. Sometimes you can get a more convincing stereo effect by copying a sample to two layers and varying one of the sample's start

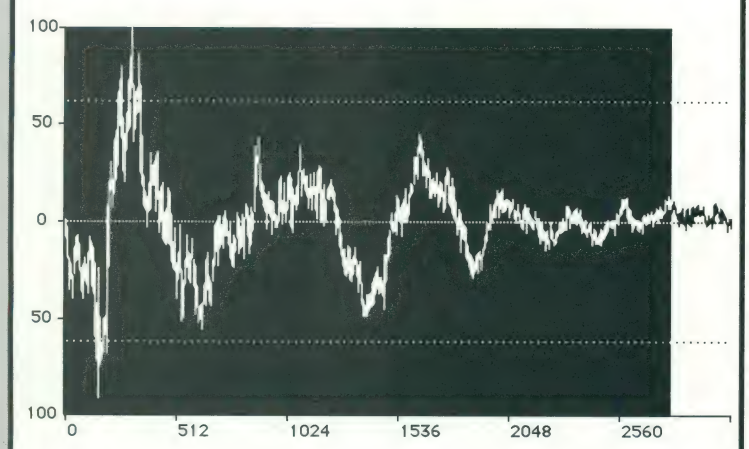


Fig. 2. Here we've zoomed in on the attack portion of the sample shown in Figure 1. Note the horizontal dotted lines at a level of about 66%. This is the threshold to which we're going to reduce the waveform.

ABOUT THE AUTHOR

Craig Anderton is a monophonic synthesizer with a three-octave range, pitch-bend, vibrato, and several gigabytes of on-board memory. He responds to both pressure and velocity.

points, particularly if the sample is a pad or other non-percussive sound. The later the sample start point, the wider the apparent stereo spread, until you reach a point of diminishing returns. Try to find the balance between taking too little off the start, which creates mono compatibility problems, and too much, which might delete a sound's transient. If necessary, add a bit of attack time to the amplitude envelope to mask any abruptness in the shortened sample's attack.

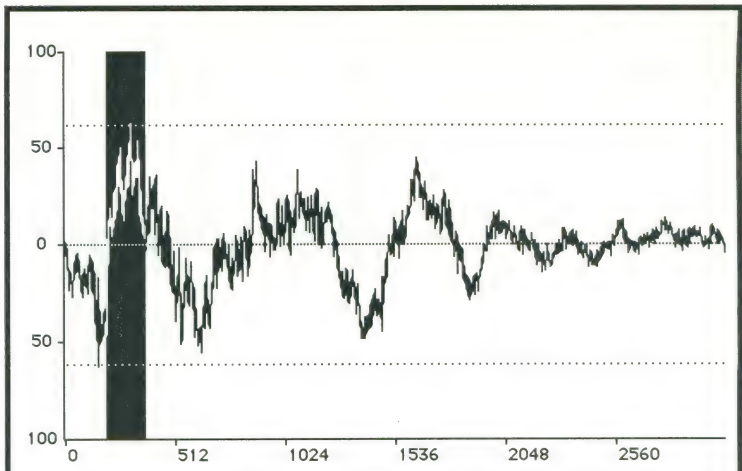


Fig. 3. Here an individual peak from the sample in Figure 1 has been selected (the selected region is shown in inverse video) and its gain reduced. The hottest peaks in the sample are now only at 66% of full code.

Perfect Piano Loops. Piano notes are percussive, have no steady-state sustain, and feature long decay envelopes — just the type of source material that you *don't* want for looping. Many times, especially if you're dealing with limited memory or if your sampler doesn't provide a good crossfade loop algorithm, the best option may be to grab a single-cycle loop close to the end of the decay. But you can expect to hear a slight pitch/timbre change when the sample transitions from the body of the sound to the loop. Also, a piano sound is naturally chorused since you're hearing multiple strings. Once the sample reaches the loop, the chorusing dies.

One solution is to create a copy of the piano waveform that appears only during the looped portion of the sound. Add a delayed attack or moderate attack time to this looped waveform (for best results, have the envelope time track the keyboard) so that the copy fades in just before the main envelope's loop begins. Layer the copy with the original sound, and "tune" the copy so that if, for example, the original loop goes slightly sharp, the copy goes slightly flat. This creates artificial chorusing, thus minimizing the timbral difference between the body of the sound and the loop; the equal and opposite pitch offset for the copy restores the sense of proper pitch. If you get the tuning just right, the chorusing caused by the two loops interacting with each other can match the natural chorusing that's part of the main sample.

Perfect Rhythm Loops. In a lot of techno and house music, it's essential that sampled sounds fit in with the tempo. However, since many of these samples are "found sound," they aren't always the right length. Altering the loop points does work, but this may cut out parts of the sound you want to keep, or be forced to include bits you'd rather not hear. Worse yet, the sample may not have enough material to create a loop of the right length.

The standard technique, available on most newer samplers, is to use a time-stretch DSP algorithm. But what if your sampler doesn't offer time stretching? You can use pitch-bend data creatively to speed up or slow down selected parts of the sample. For example, if you have a repeating spoken phrase, slowing down just one word could lengthen the loop just enough to mesh perfectly with the tempo. Better yet, this may give a really cool sound!

Free Noise Reduction. Got a noisy sample? Use the sampler's on-board filtering to reduce the noise. Apply an envelope to the filter so that the maximum high-frequency response occurs during the attack. During the sustain or decay, close the filter down more to reduce noise. This simple procedure can really help clean up otherwise marginal samples. A sample with a quiet decay at the end is usually a good candidate for this technique, but you need to apply it sparingly so as not to make the decay sound artificially short. Digitally compressing the sample first (see below) will allow you to apply a tighter envelope without ruining the natural shape of the note.

Free Echo Effects. To create echo without an external signal processor, loop a non-sustaining sound. Set the loop start point at the sound's beginning, and adjust the loop end for the desired echo period (you may need to graft on some silence for longer echo times). Then process the sound through an amplitude envelope that decays over time, so that the echoes fade out. The tradeoff is that the echo time shortens when you play higher notes and lengthens with lower notes . . . but that can actually give some cool effects. You can create a more complex echo by splicing several different samples together using your sampler's cut-and-paste commands and then looping the result.

Why Be Normal(ized)? In the studio, many engineers use compression or limiting to decrease a percussive sound's dynamic range. This lets you print a higher average level on tape for more "punch." You can

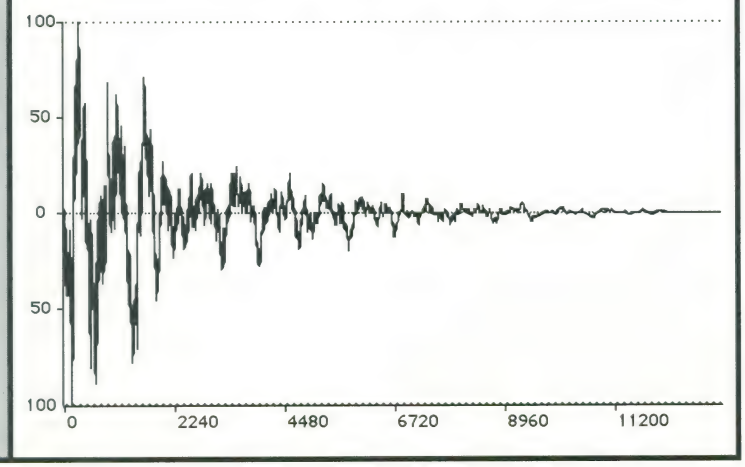


Fig. 4. To finish the process, we gain-normalize the whole sample. This brings up the quieter parts while restoring the initial attack to its former level. (To see the results, compare Figure 4 with Figure 1.)

build the same effect into samples.

Figure 1 shows a typical percussion sound with a sharp initial attack transient. If you set the level low enough so that the peak doesn't distort, the drum's "tail" will be at a very low level.

To create a more compressed version of the sample, you need a sample editor with a gain normalization option that lets you restrict the dynamics to a user-settable threshold. (Not all samplers' gain normalization commands will do this. Some are capable only of increasing the sample's amplitude to full code, not restricting it to within a threshold value.) Set the threshold to about 66% of the existing dynamic range. Figure 2 shows the same bass drum sample, but zoomed in on the attack for clarity; the dotted line shows the threshold.

Now normalize *individual peaks* that exceed the threshold, bringing them down to this threshold. (The region selected for normalization should always be bounded by zero-crossings, to prevent pops and clicks.) Figure 3 shows the same region as Figure 2, but with the first two peaks normalized to the threshold (the highlighted section has just been normalized).

Return the threshold to maximum, and normalize the entire waveform to maximum dynamic range. Compare Figure 4 to Figure 1; the average signal level is considerably higher than it was to start with.

Limiting in the digital domain means minimal pumping, overshoot, distortion, and other problems associated with analog limiting (although limiting does bring up the noise floor by an amount equal to the number of dB by which the signal is limited). Another caution: Limiting can also make quantization noise seem more pronounced.

Normalization can bring up low-level signals as well as attenuate high-level signals, but attenuation followed by normalization seems to work best.

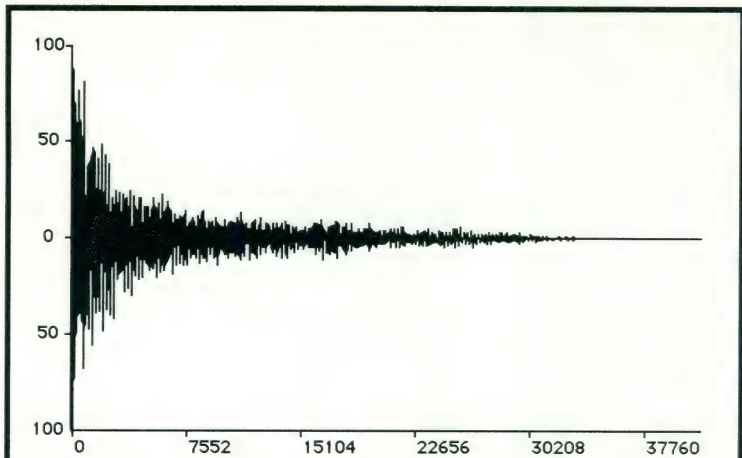


Fig. 5. A typical snare drum sample, with reverb as part of the sample.

Weirdo Techno Percussion. The same vocal samples that form the backbone of a techno tune can make great percussion instruments. What seems to work best is transposing up an octave or two (or three), and striking the keys rapidly. Sounds that start with plosives (p, b, etc.) and sibilants (s, sh, etc.) work best for this application. You may find that it's fun to slice and dice a single spoken phrase into several separate words, each of which can be triggered in its own stuttering rhythms.

Pitch-Shift Plus Transpose. To save memory, you can digitally pitch-shift a sample to a higher pitch. (This usually requires a reasonably sophisticated visual editing program, such as Passport's Alchemy, or a sampler with the same sort of DSP functions on-board.) On most sample editors, pitch-shifting shortens the sample time, thus saving memory. Some may allow pitch-shifting to be combined with time-stretching, which will cause the sample to get higher in pitch without being shortened.

When assigning the shifted sample to the keyboard, transpose it down from the unity (root) pitch by an amount equal to the amount by which it was pitch-shifted up. The result: a sample with the same apparent pitch as the original, but which takes up considerably less space. You don't get a free lunch, though; the usual tradeoff is more low-end grit.

Mod Wheel Phrase Chopper. The quickest way to play a rhythmic loop or phrase in double-time is to tie the sample start or end point to the mod wheel so that pushing the mod wheel all the way forward cuts the time in half. This technique also works well with spoken word phrases when you want to selectively cut words from the beginning of the phrase. However, if you want to do serious sentence deconstruction, you're better off making several copies of the sample, assigning them to different keys, and adjusting the start and end points to isolate individual words.

Flam It! Flam effects, where two percussive hits occur within a fraction of a second of each other, can add useful accents to toms, vibes, handclaps, and the like. Assuming your layers have a programmable delay time, copy the sounds to be flammed to a separate "flam layer," then set the layer delay for 20 to 50 milliseconds — instant flam. Control the layer's level with the mod wheel or pedal, or with velocity switching, so you can bring the flams in and out.

If you can't delay a layer, there's a workaround. During the sampling process, leave a little bit of "dead air" at the beginning of the sound to be flammed and layer two of these samples on the same key. For the main sound, move up the sample start point so that the dead air goes away (but don't truncate the sample; just move the start point). For the flammed sound, trim the start point for the desired amount of delay.

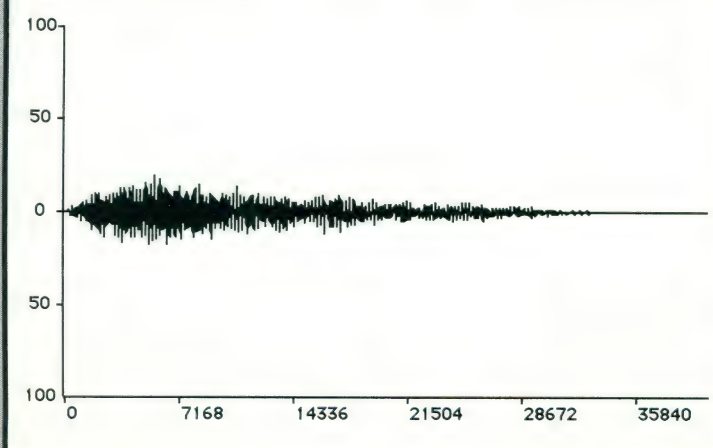


Fig. 6. After trimming off the attack portion of the sample and applying a digital fade-in, we have a generic reverb "tail" that can be used to add ambience to any drum sound. (This low-level sample might be a good candidate for gain-normalization.)

FOURTEEN HOT TIPS

If the sound to be flammed has already been sampled, insert about 50 milliseconds of silence at the beginning of the sound, then follow the same procedure. (I keep a short "silence" file on my hard disk for such purposes.)

Space: The Final Sampling Frontier. Sampled ambient drums are very popular, but sampling with reverb quickly uses up huge amounts of memory. A more memory-conserving option is to sample dry drums (or truncate the tails off samples with ambience), sample the ambience separately, and layer the two together.

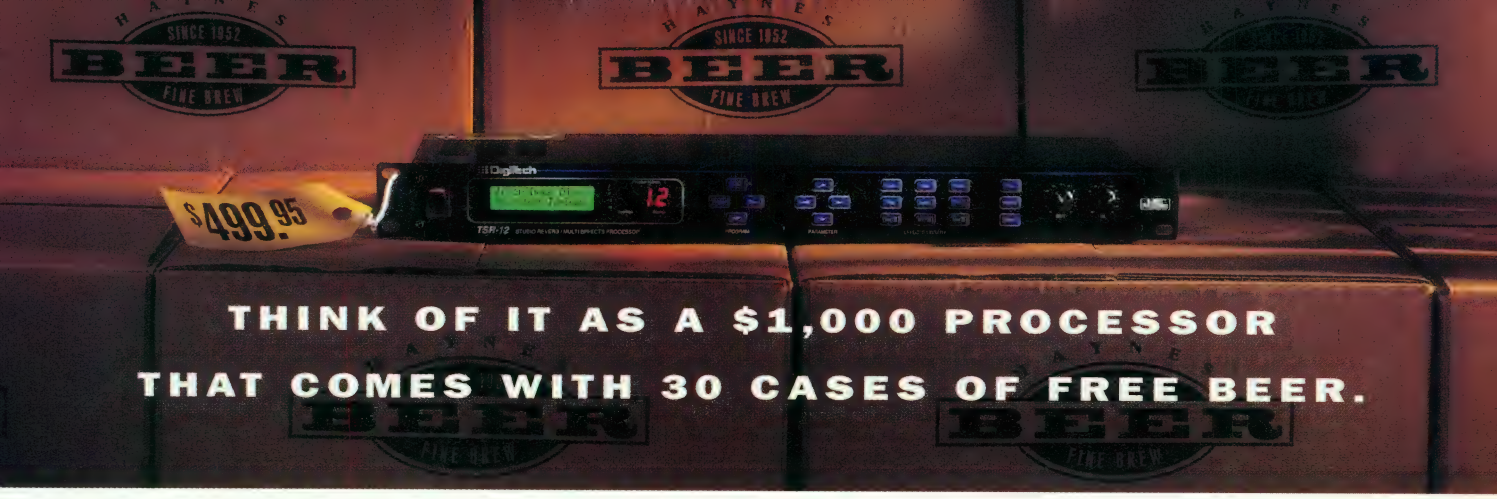
Start by locating a usable "universal" ambience sample, such as a snare sample with a long ambient tail (see Figure 5). To create the ambience sample, locate where the primary snare sound has decayed, and do a DSP fade-in to that point (Figure 6). This may require a couple of successive fades to get rid of most of the snare sound. Also consider normalizing the ambience sample for a hotter level.

Assign the ambience sample to a separate layer so that it triggers along with the snare; for the other drums, create copies of the ambience sample, process them as appropriate (for example, with a low tom sound you would probably transpose the ambience down several semitones and filter out some of the brightness), then assign them to the keyboard as appropriate.

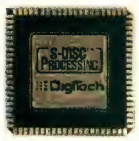
You can also process the ambience for added effects: add an envelope to the ambience sample and shorten the decay to reduce the size of the "room," simulate gated reverb by setting the ambience sample's envelope for an abrupt cutoff, or use the sample reverse function for instant backwards reverb.

Another useful option is to assign the sampler's mod wheel so that it controls filter cutoff on the ambient samples to "deaden" or "brighten" the room, or control the amplitude of the ambience from the wheel to modulate the wet/dry mix.

Mess Around. In these pages we've only scratched the surface. Don't be afraid to experiment! It's truly amazing how many people pay thousands of dollars for features they never use. Tweak some parameters — it's good for your musical health, and makes sampler designers feel appreciated.



Let's talk about technology. The TSR-12 uses DigiTech's proprietary S-DISC, the most powerful digital signal processor chip designed specifically for audio applications. So it offers unheard-of specs that always deliver clean, crisp sound. Even the most expensive processors use your basic off-the-shelf chip. Which gives them your basic off-the-shelf performance.



How about noise? If you don't hear any, it's because the TSR-12 has the exclusive Silencer™ digital noise reduction system. The Silencer is so intelligent, it closes and writes digital zeros when there's no analog signal present. Higher-priced processors may offer noise gates, but they can't guarantee digital black.

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And now a word about effects, since that's probably why you're reading this. The TSR-12 includes 128 factory-fresh presets and 32 effect algorithms. Built-in memory lets you program 128 of your own multi-effect sounds. And one of those more expensive processors? Just 100 presets and 9 algorithms. If you're lucky.

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physical modeling

THE HISTORY OF DIGITAL SIMULATIONS OF ACOUSTIC INSTRUMENTS

Yamaha's recent announcement of a new generation of "virtual acoustics" synthesizers, the VL1 and the VP1, suddenly pushes *physical modeling* (PM) synthesis into the limelight, after decades in the wings of research and development. "Virtual acoustics" is a marketing term that describes a specific approach to PM synthesis based on *waveguide filters,* which we'll discuss below. But what is physical modeling synthesis, and what are its benefits in comparison to existing techniques like sampling? This article aims to answer these questions. [*Ed. Note: For more on physical modeling, see "The Next Big Thing" in* Keyboard*, Feb. '94.*] ■ PM synthesis starts from a mathematical model of an acoustic sound generator, such as a musical instrument or the human voice. The model

BY CURTIS ROADS

IN 1947, CHUCK YEAGER BROKE THE SOUND BARRIER.

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physical modeling

consists of equations that describe the mechanical and acoustical behavior of the instrument as it is played. To the scientist, a physical model is interesting because it embodies the Newtonian ideal of a precise mathematical description of a complicated mechanico-acoustical process.

To the musician, a PM instrument is interesting for several reasons — first because it simulates the behavior of traditional instruments in performance. Because the simulations are electronic, a synthesizer can model many different instruments at the push of a button.

This is convenient, a skeptic might observe, but what is the point of simulation if we already have real instruments? One answer is: The possibilities of PM go beyond the real world. PM can create sounds of fanciful instruments that would be impossible to actually build, wild instruments whose geometry can change over time, such as an elastic cello that "expands" and "shrinks" over the course of a phrase, or impossible drums whose heads cannot be broken no matter how hard they are hit. PM techniques are scalable, so that from a description of one gong one can fabricate an ensemble of a dozen gongs, say, ranging in diameter from 30 centimeters to 30 meters. Starting from a description of a single string, a musician can play a virtual guitar whose strings are as long and thick as bridge suspension cables. To the delight of musical alchemists, changing the materials of construction — from silver to brass, to exotic woods, to plastic — may be as simple as pushing a button on a synthesizer.

NOTE-TO-NOTE TRANSITIONS: PHYSICAL MODELING VERSUS SAMPLING

When you press a key on a sampler, it emits a reasonable semblance of a single note played by an acoustic instrument. But when you put the notes together into phrases, melodies, and chords, it is obvious that major chunks of acoustic and performance information have been left out. This points out a fundamental limitation in existing sampling technology. In expressive instruments like saxophones, violins, and guitars, each note is created in a musical context. Within a phrase, a note is reached from another note (or from silence) and leads into the successive note (or leads to silence). Resonances from previous notes may ring across or beat against these transition points. Transitional sounds like breathing, tonguing, key clicks, and sliding fingers along strings punctuate the phrase. And the virtuoso applies context-sensitive effects such as rubato, portamento, vibrato, crescendi and diminuendi to individual notes and groups of notes.

In contrast to sampling, PM synthesis excels at simulating *transitions* between notes and timbres. Dynamically adjusting the parameters of a virtual instrument (such as elongating a virtual resonating tube) often results in believable sonic transitions. PM also captures the accidents that occur in performance, such as squeaks, mode locking, and multiphonics. These sounds are uncontrollable when a novice attempts to play, but when used in a controlled manner they inject a dose of expression. In PM synthesis these sounds occur "naturally," as a side effect of certain parameter settings.

EXCITATION & RESONANCE

PM synthesis captures the interaction between an *exciter* and a *resonator.* An *excitation* is an action that causes vibration, such as the hit of a stick, the stroke of a bow, or a blast of air. A *resonance* is the response of the body of an instrument to the vibrations generated by the exciter. From a signal-processing point of view, the body acts as a filter applied to the excitation signal.

Exciter/resonator interactions fall into two basic classes: *decoupled* and *coupled.* If we connect the output of a noise generator to a filter, for example, the noise generator (exciter) and

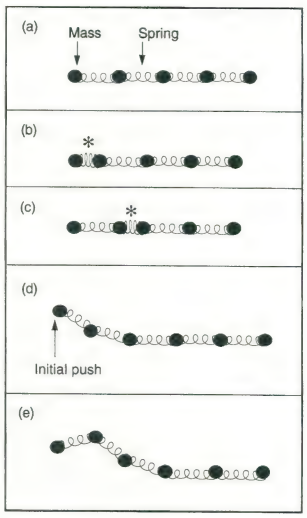


Fig. 1. Mass-spring model of vibrating strings (see page 93). The springs model the elasticity of the string. In a longitudinal wave (b), the compression (indicated by an asterisk) moves in the same direction as the wave propagation. As the wave propagates (c), the second mass moves to the right, compressing the second spring. In a transverse wave (d), the initial disturbance is perpendicular to the direction of wave propagation. Again, the action of the springs puts succeeding masses into motion (e).

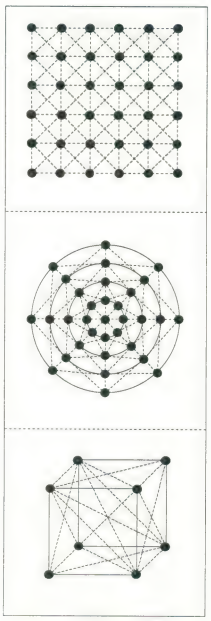


Fig. 2. Models of vibrating surfaces and volumes (see page 94). The black dots are the masses, and the lines represent springs. (a) Model of a vibrating surface. (b) Model of a drum head as a circular arrangement of springs and masses. (c) A vibrating volume can be modeled as a lattice of masses connected by springs on six sides.

Never since the very first sound of the human voice emanated from the earliest created of mankind, causing the oral mystery of sounded syllables to float upon the balmy airs of Paradise, until now, has aught been perfected which could approximate in any real degree to the Divinely bestowed "music of speech." Many and varied have been the efforts made, from time to time, to accomplish this apparently impossible purpose, but all have proved alike worse than futile. It has been reserved for Mr. Giacopo Saguish of Constantinople to become the wonderful and fortunate inventor of the Automaton Head, which (*miraculous* to relate) he has so contrived, by means of the nicest and most exquisitely constructed mechanism, that it can rival Nature herself in its vocal and elocutionary powers. — Description of the Anthropoglossos (a mechanical vocalist), London 1835

physical modeling

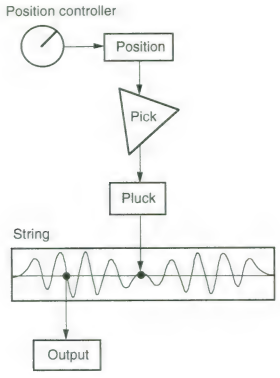


Fig. 3. A plucked string as simulated by the MOSAIC program. (See the text, page 96, for an explanation.)

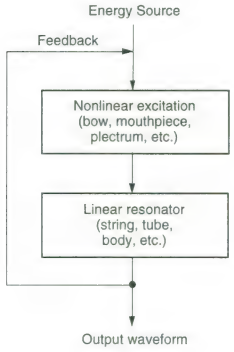


Fig. 4. The McIntyre, Schumacher, and Woodhouse model of instrumental oscillation (see page 96). Wave reflections from the linear resonator influence the nonlinear exciter, constituting a feedback path.

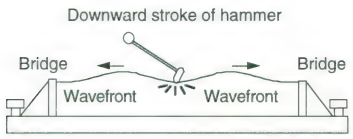


Fig. 5. A string struck at the center generates two waves moving in opposite directions (see page 97). This is the basis for the waveguide delay line model of strings.

the filter (resonator) are decoupled. That is, there is no other interaction between the source and the excitation than a transfer of sound energy from the exciter to the resonator. In contrast, the mechanism of tone production in a saxophone is an example of coupled excitation. This means that the vibration of the resonanting part feeds back to the excitation part. In particular, the frequency of the vibrating reed is strongly influenced by acoustic feedback from the resonating bore (tube) of the instrument, after being excited initially by a blast of air from the mouth.

The interaction between the excitation and the resonance creates the variety and subtlety of sound we hear in performances by instrumental virtuosos. Because PM techniques can model this interaction, they tend to communicate a sense of gesture behind the emission of sound.

ANCIENT HISTORY OF PHYSICAL MODELING

PM synthesis is not one technique, but a family of methods developed by researchers over several decades. Because of their mathematical nature and the heavy computational load they impose, PM synthesis emerged slowly from the laboratory. Only in the mid-1980s were efficient implementations developed for certain types of PM synthesis. These efficient algorithms are based on common signal-processing operations such as delay lines, filters, and wavetable-lookup operations.

It should be mentioned, however, that the efficiency of techniques such as used in the new Yamaha synthesizers comes at the expense of drastic simplifications. This means that they generate instrument-like tones, and in particular instrument-like transitions, without necessarily capturing the last drop of realism. In any case, realistic simulation should not be used as the only standard by which to judge a synthesizer. What PM offers is a quality of expressive performance that has been lacking in samplers, and a flexibility that can take it beyond known instruments. On these counts alone it is a welcome addition to the electronic orchestra.

The concepts behind physical modeling synthesis can be traced to nineteenth-century scientific treatises on the nature of sound. Lord Rayleigh's extraordinary *Theory of Sound*, published in the 1890s, detailed the principles of vibrating objects and described the mathematical physics of vibrations in open air, tubes, and boxes. Analog electronic models of human speech mechanisms were created as early as the 1930s, but progress in refining these models was slow until the computer era.

John Kelly and Carol Lochbaum at Bell Telephone Laboratories were the first to adapt a physical model of the human vocal tract to digital sound synthesis. Their rendition of *Bicycle Built for Two*, which appeared on the Bell Telephone Laboratories disk *Music from Mathematics* produced by Max V. Mathews in 1960, became a world-famous symbol of the increasing capabilities of digital computers. (The Stanley Kubrick film *2001: A Space Odyssey* makes reference to this achievement when the once-powerful computer HAL regresses to its earlier days and sings this song. The version in the film is sung by a human actor, however.)

By 1967, Lejaren Hiller, James Beauchamp, and Pierre Ruiz created the first physical models of plucked string instruments on the Illiac computer at the University of Illinois. Concurrently, Professor Ercolino Ferretti, working at Harvard and MIT in the 1960s, made his own models. In 1967, encouraged by preliminary results, Ferretti set up a Massachusetts company called Ferretti-Lay, with the goal of commercializing computer-synthesized music. The main investor was the corn-chip magnate Michael Lay. Unfortunately, the computational demands of classical PM techniques oversaturated their mainframe computer. Ferretti-Lay disbanded in 1970. The technical difficulties these pioneers encountered — little acoustical data, extremely slow computers, inefficient models, and primitive programming environments — cannot be underestimated.

A decade later, technological conditions had improved somewhat. Claude Cadoz and Annie Luciani of the ACROE group in Grenoble, France, continued to push PM synthesis into the forefront of digital synthesis research, despite the enormous computation times involved.

But this was not their only contribution. A physical model, they reasoned, was meant to be played. The physical construction of an acoustic instrument constrains it to a particular action. On a trumpet, for example, high-pitched notes require more physical effort. The strings of a sitar or guitar require manual force to be bent, and a well-adjusted piano action contributes to the performance of a virtuoso. By contrast, the input devices attached to electronic instruments often have little mechanical "feel" to orient the musician. Computer control of mechanical devices offers the possibility of input devices with a *programmable response* to the touch. By using digitally controlled electrical motors, Cadoz and Luciani designed keyboards and joysticks with a variable *force-feedback* response, corresponding to the synthesis model they drive.

By the mid-1980s, the discovery of the Karplus-Strong (KS) plucked-string algorithm at Stanford's Center for Computer Research in Music and Acoustics (CCRMA) provoked fresh interest in PM as a practical real-time synthesis technique. The KS method began as something of a hack — a very efficient algorithm that emitted a resemblance of a plucked string. The commercial potential of KS synthesis was no-

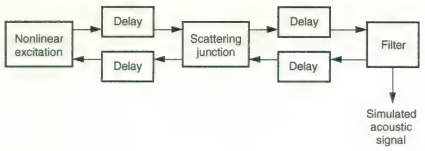


Fig. 6. Generic waveguide instrument model for simulating stringed or wind instruments (after P. Cook). A nonlinear excitation injected into the upper delay line travels until it hits the scattering junction, which models the losses and dispersion of energy that occur at junctions in acoustical systems. Some energy returns to the oscillator junction, and some passes on to the output junction, modeled by a filter. (See page 97.)

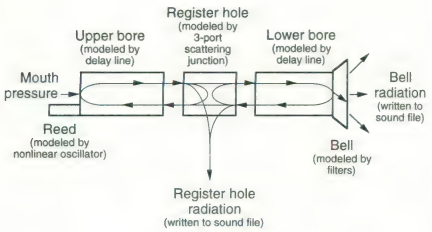


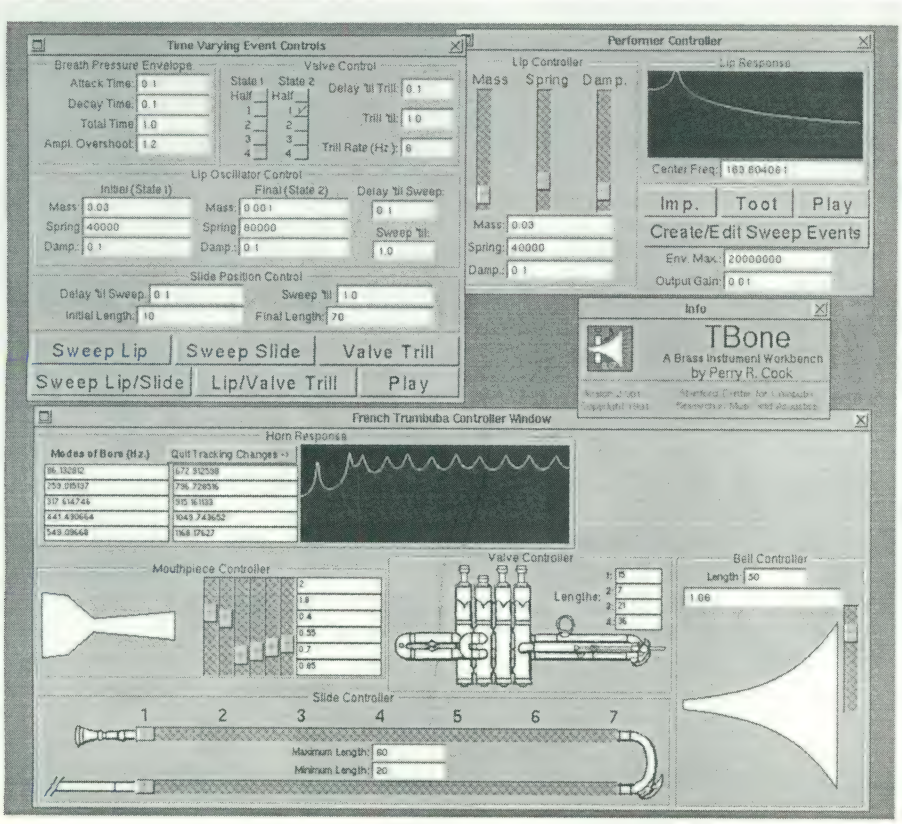
Fig. 7. Clarinet modeled using waveguides (see page 97). Only a single hole is needed, since the sizes of the upper and lower bores change according to the pitch being played.

ticed by the Mattel toy company, which licensed the technology and built a chip to realize it before they canceled the project due to internal corporate politics.

By recognizing that the KS algorithm was a form of waveguide filter (see below), Julius Smith and his colleagues at Stanford placed the algorithm in the framework of a more general theory. They continued to extend their models — to drums, wind instruments, and strings — and published many papers in the computer music and acoustics literature. Julius Smith worked part-time for the fledgling NeXT Computer company, so it is not surprising that the first implementations of waveguide PM synthesis appeared on the NeXT workstation, many developed by Smith's graduate student Perry Cook.

CCRMA made these programs available via Internet, so that in 1992 many musicians, including this author, were trying out waveguide PM synthesis for themselves. Some time earlier, the Yamaha company had entered into a secret agreement with Stanford to commercialize this technology. Obscured by recent publicity is the fact that researchers at the IRIS center in Italy — notably Andrea Paladin and Davide Rochesso — had already implemented waveguide instruments on the MARS musical workstation sold by Bontempi/Farfisa. Notices appeared in Bontempi/Farfisa advertising literature as early as December 1992, a full year before Yamaha's announcements. Even so, Yamaha's dramatic 1993 introduction of a ready-to-play commercial keyboard synthesizer based on waveguides — the VL1 — took many by surprise. Making waveguides playable is no small part of their achievement.

Fig. 8. TBone brass instrument workbench. (See page 97 for details.)



THE CLASSICAL METHOD OF PHYSICAL MODELING

Prior to waveguides, a "classical" theory of PM drove research. Classical PM models sound-producing structures as a mesh of tiny *masses* interconnected by *springs*. This approach dominates descriptions of instrument behavior in textbooks on musical acoustics.

The oldest mass-spring model (developed by Joseph Bernoulli in the nineteenth century) is that of a vibrating string. Rather than considering the string as a continuous medium, he modeled it as a discrete structure like a string of beads. This model captures two essential qualities of vibrating media. First, vibrating media have a *density,* which is the mass per unit amount of the medium. For a string, the density can be measured as its weight. Second, vibrating media are *elastic;* if any part of the medium is displaced from its position of equilibrium, a restoring force — modeled by the spring — immediately appears that tries to push it back. If we create a disturbance in one part of the string by plucking it, the displaced springs exert forces on adjacent masses, causing them to move away from their equilibrium position. This in turn causes others to move, and so on, in a process called *wave propagation.*

Because of the mass of the medium, the springs do not move instantly, but instead require a short time. As a result, a pluck impulse propagates through the medium at a specific speed (see Figure 1).

Figure 1a depicts a string as a number of identical masses connected together by light springs. If the first mass is displaced to the right, the first spring compresses, exerting a force on the second mass (Figure 1b). The second mass will then move to the right, compressing the second spring, and so on, as in Figure 1c. Since the displacements of the successive masses are in the direction that the disturbance is traveling (that is, horizontally), this is called a *longitudinal wave.*

Figures 1d and 1e show *transverse wave* propagation that occurs when the initial displacement is perpendicular to the direction that the wave propagates. This is the main type of wave vibration occurring in musical strings that are plucked, hammered, or bowed. Another type of vibration is *rotational,* but this is not usually modeled in sound synthesis.

The effect of excitation on a given point of the string can be modeled as the application of a force to a single mass that transmits this

Fig. 9. Perry Cook playing his prototype HIRN controller (see page 97).

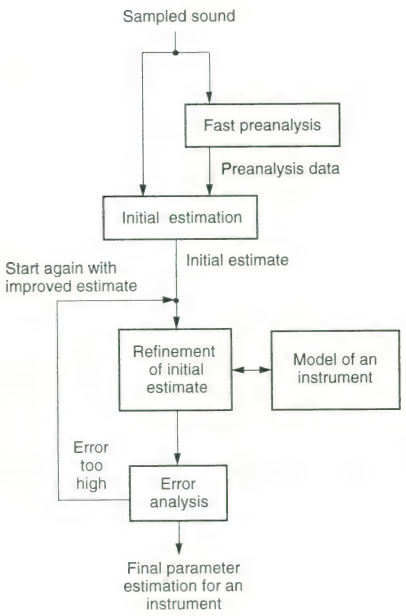


Fig. 10. Parameter estimation sound analyzer implemented by Erling Wold (see page 99). The goal was to estimate parameters for a physical model-based synthesizer, with a view toward separation of two mixed signals. If a given estimate was too far from the approximate state-equation model, the system tried another iteration of estimation.

force to the other masses via the springs. After a string has been struck, the shape of the string at a particular point in time is determined by solving a set of equations.

The mass-spring representation can be extended to vibrating surfaces and volumes. Surfaces can be modeled as a fabric of masses connected by more than one spring (Figure 2a), or arranged in a circular pattern to model the skin of a drum (Figure 2b). Volumes take the shape of a lattice (Figure 2c), with the masses interconnected up to six ways.

A mass-spring model can also describe the excitation. The nonlinear oscillators that are often used as exciters in PM methods can be viewed in terms of masses interconnected by *nonlinear springs*. The masses represent the inertial behavior, while nonlinear springs account for elastic properties of the body of the exciter. A nonlinear friction component accounts for the contact condition between the exciter and the resonator. Such a representation has been used in a model of the hammer of a piano, for example.

The work of building a classical physical model of an instrument is a major scientific project, consisting of the following steps:

1. Specify the physical dimensions and properties of the vibrating objects, including their mass and elasticity. Describe the behavior of the vibrating objects in terms of difference equations.

2. Describe the *boundary conditions* to which each vibrating object is constrained; these are the limiting values of the variables that cannot be exceeded.

3. Specify the *initial state* of the instrument, for example, the starting position of a string at rest.

4. Insert the appropriate equations describing *impedence* effects at the linkages of the various parts of the instrument. Impedence is a resistance to a driving force; in a medium with high impedence, a large force is required to generate a small amplitude. As waves pass from one part of an instrument to another, the impedence of the different parts alters the wave propagation. For example, if two strings are joined, and one is much heavier than the other, the wave will hit the heavier string and nearly all the energy will be reflected back to the lighter string, whereas if the two strings are of equal impedence, there will be no reflections.

5. Specify the filtering due to factors such as friction, and the pattern of sound radiation from the instrument.

6. Program an *excitation* in terms of an algorithm that acts as a force impinging on the vibrating object. Typical sources of excitation include drumsticks, mallets, and piano actions, wind sources such as the flow of air between reeds, and the bows of stringed instruments. Coupling (feedback) between exciter and resonator can be specified in this algorithm.

At this point one has a rather complicated set of equations that represent a physical model. To generate sound one activates the *wave equation algorithm*, which combines all these factors. This involves an iterative approximation procedure that tries to find reasonable values for dozens of interdependent variables simultaneously. In these methods a solution is obtained by first guessing at a solution and then successively improving the guess, iteratively. After some number of iterations, the wave equation emits a single sample value representing a sound pressure wave at a given instant of time.

This laborious procedure must be carried out for each and every sample, meaning that the classical approach to PM synthesis poses a brick wall of computation. In the 1980s researchers were looking for ways to simplify the classical model in order to build more practical implementations. This research followed three main lines, which we'll look at next.

MODAL SYNTHESIS

Modal synthesis, developed by Jean-Marie Adrien and his colleagues at IRCAM in the late 1980s, represents a simplification of the mass-spring paradigm. It starts from a premise — well-known in the industrial world — that a vibrating object can be broken down into a collection of substructures. The number of substructures is usually small in comparison with those in the classical mass-spring approach. Typical substructures of instruments include violin bridges, violin bodies, acoustic tubes, bells, drum heads, and so on.

When it is excited, each substructure has a set of natural *modes of vibration* that are specific to a particular structure. A factor in favor of modal synthesis is that a well-defined methodology for analysis of modes of vibration already exists, due to its many industrial applications. This methodology can be adapted to sound synthesis.

For simple vibrating structures such as a string, the modal data is available in the mechanical engineering literature in the form of equations. For complex vibrating structures the modal data can be obtained through experimentation with actual instruments. Tools for this type of mechanical engineering analysis — transducers and analysis software — are used in other industrial applications and so are available to acoustics researchers.

Besides a reduction in computational complexity, the modal approach has an advantage of flexibility over the mass-spring paradigm. This derives from the modularity of the substructures. The instrument designer can add or subtract substructures to create time-varying synthesis effects, such as "expanding" or "shrinking" the size of an instrument. The method also permits timbral hybrids to be created by combining substructures from different instruments.

MOSAIC, a program written in Lisp and de-

Continued on page 100

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Ultrafex II from Behringer: The First Enhancer with Stereo Surround.

Only 32, Ulrich "Uli" Behringer has already produced a world-class line of signal processing encompassing over 20 ground-breaking products.

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For more information about the full line of Behringer signal processing, please call (516) 932-3810, fax (516) 932-3815 or write to Samson Technologies Corp., P.O. Box 9068, Hicksville, NY 11802-9068.

Suggested retail price for Ultrafex II is $349.99.
Behringer is exclusively distributed in the U.S. by Samson Technologies Corp.

KILLER ★★★★★
COOL ★★★★
AVERAGE ★★★
HO-HUM ★★
BOGUS ★

BIG FISH AUDIO ROSS GARFIELD DRUMS

SOUND QUALITY: ★★★★★
SELECTION: ★★★★
BANG FOR THE BUCK: ★★★★

Overview: Top-notch collection of bitchin' acoustic drum and percussion samples, plus a few techno sounds.

Contents: Over 1,200 multi-articulation samples of snares, kicks, hi-hats, toms, cymbals, and miscellaneous percussion, arranged in standard banks as well as General MIDI banks.

Retail Price: $399.95 (CD-ROM), $99.95 (audio CD).

Contact: Big Fish Audio, 11003 Penrose St., Suite C, Sun Valley, CA 91352. (800) 717-3474, (818) 768-6115. Fax (818) 768-4117.

CD-ROM (SampleCell, Akai, Roland, E-mu): ROSS GARFIELD DRUMS

The cover of this CD declares it "The Best Drums on Earth," so you can bet we approached it with a bit of healthy skepticism. But we were very pleasantly suprised by the quality and selection of these sounds. Ross Garfield, nicknamed "the Drum Doctor," has compiled an impressive collection of drum and percussion samples, all neatly arranged on this disc. We chose to test the SampleCell version; it's aimed at SampleCell II users, but includes banks for the original SampleCell, too.

Almost all of the Ross Garfield samples are of great-sounding instruments recorded in great-sounding rooms with excellent mikes. The set isn't the most complete selection of drums you'll find; techno and industrial sounds make up less than 5% of the collection, the lion's share of the disc being devoted to acoustic drums and percussion instruments. (There is a complete complement of Roland TR-808 sounds, however.)

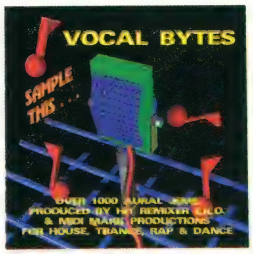
On most of the drums there are from three to five levels of dynamics. In addition, many of the samples are of the same drum with the same reverb and the same general dynamic level; some might see this as a waste of space, but if you're going for realism — one of this collection's biggest strengths — using several different hits within a pattern can really liven things up. Finally, many of the drums are sampled in different reverb environments. All of the sounds (even the kicks) are sampled at 44.1kHz.

Snares are usually the weak link in drum-sound collections, but not here. Plenty of these snares are very contemporary-sounding, with a hard, cracking attack and a warm over-ring. For rock-and-roll realism, we especially like the "1925 4x14 Ludwig" and the "thrash" snare groups. The ballad snares are beautiful, and the more generic snares are nice and crisp. The kicks are also excellent, with a great selection of dry and wet samples, although none have really huge reverbs. (But hey — that's what effects sends are for!)

The hi-hats are exquisitely EQed and span the spectrum from tightly closed to wide open, but missing are hard-hit, loose hats — they'd complement the slammin' thrash snares nicely. There are more toms than you can shake a stick at (187 total), many of which are very punchy and airy. The ride and crash samples are generously long (most ring for five or six seconds), with plenty of choked variations; in many of the crashes you can clearly hear the cymbal rocking on the stand during its decay — also great for realism. The percussion sounds range from the exotic (caxixi and chinchin) to the not-so-exotic (pots, pans, and broom handles) and live up in every way to the rest of the collection. A few of the rides and percussion (like guiro) come in loop-ready "pattern" versions.

The samples are arranged into instruments, which in turn are arranged into banks. You can open one of 48 standard banks or 30 General MIDI banks, or build a bank of your own from the many instruments; there are low-memory configurations as well as extended-memory ones. Documentation can be found in a "Read Me" file, and everything is well indexed in database files that can be opened in a spreadsheet or word-processor program.

Are these the best drums on earth? That's a tall order, but we'll bet that if you own this collection you won't need to scrounge around for acoustic drum samples very often. (And it sure is hard to find a caxixi at 11 PM on a Sunday night!) We encourage you to check out the Ross Garfield collection — it might satisfy your drum-sound hunger for a long, long time. —*Karl Coryat*



MIDI MARK VOCAL BYTES

SOUND QUALITY: ★★★★★
SELECTION: ★★★★★
BANG FOR THE BUCK: ★★★★★

Overview: A splendid collection of humorous, R&Bish, reggae-ish, and raunchy male, female, computer-generated, and processed vocal samples for house, trance, rap, and dance music.

Contents: 1,071 vocal samples spread across 61 tracks (including demo song); about one hour of vocal material.

Retail Price: $99.

Contact: MIDI Mark Productions, Box 217, Whittier, CA 90608. (310) 699-0095. Fax (310) 699-0864.

SAMPLING CD: VOCAL BYTES

When we heard some of the one-thousand-plus lines that were sung, chanted, screamed, howled, and scatted by exceptional professional blues, R&B, and gospel singers for MIDI Mark's *Vocal Bytes*, we just couldn't wait to get them into our sampler. With this CD, you'll not only have fun choosing among the sometimes R-rated and processed sound bytes, you may also find them useful for situations beyond the rap, trance, house, and dance styles for which they were intended. You might even lighten up the dour listeners at an academic electro-acoustic concert with some of the humorous interjections that can be found here, such as "Come on and dance, sugar," "It's about time to light up a spliff," or a pseudo-sinister pirate laugh. Just as important for serious sampler users: These samples are royalty-free.

Although tracks aren't indexed, all the lyrics are quoted in the CD's liner notes. Forty-nine of the 61 audio tracks feature a soloist. Four women handle 23 of these tracks, and an equal number of men round out the remaining 26. Two tracks feature vocal groups of four men. The singers' vocal prowess is very impressive, in terms of both expressivity and range. Once again, these are pros, and they're capable of making joyful (and scary) vocal noises that most of us could never dream of duplicating . . . except with our samplers.

What kinds of things do these people sing, squeal, or shout? Things like "Spin it, DJ," "We can do dis all night," "Now ease yourself back into consciousness," "Woooo!" "Wa sup y'all?" and "The mutha of all groove." In a few cases, quotes are repeated in a different way by the same singer ("Can you feel it?" once softly and again with more emotion), or by another vocalist.

Some of our favorite tracks appear at the end of the disc. Two tracks consist of hilarious lo-fi samples of a male vocalist who recorded comments like "Sounds funky, don't it?" into a cheap Casio SK-5 sampler. Another two tracks feature computer-generated statements such as "Overload," "Lowpass filter," "Sonic blaster," "Virus detected," "Give me new jack swing," and "Would you like some house music?" The remaining tracks feature eerie and funny vocals sampled through three types of vocoders: a Korg DVP-1, a Roland VP-70, and a Roland SVC-350.

For the most part, levels of individual vocal bytes are fairly consistent, although a few are softer than the others. Although the sound quality on this CD is top notch, given the kind of music most people will be using these samples in, high fidelity may not be critical. In fact, a lack of fidelity might even be ideal, which is good because it

means you should be able to squeeze a lot of these vocal bytes into a minimal amount of memory by sampling at low sample rates. Keep in mind, though, that some aliasing may result in samples of powerful, high-pitched wails.

Vocal Bytes will provide you with hours of sampling and playing fun. We haven't had this much fun since Dan Quayle left office. *—Mark Vail*

BIG FISH AUDIO STUDIO GRAND

SOUND QUALITY: ★★★
PLAYABILITY: ★
BANG FOR THE BUCK: ★★★

Overview: Yamaha acoustic grand multisamples in 8, 16, and 32Mb volumes.
Contents: 8 volumes: S. Grand p, S. Grand mf, S. Grand mf/A, S. Grand mf/B, S. Grand f, S. Grand 32/A, S. Grand 32/B, S. Grand 16.
Retail Price: $99 (CD-ROM: Roland 700 series, SampleCell I & II, and Akai S1000).
Contact: Big Fish Audio, 11003 Penrose St., Suite C, Sun Valley, CA 91352. (818) 768-6115. Fax (818) 768-4117.

ROLAND S-750/760/770 CD-ROM: STUDIO GRAND

While we had the new Roland S-760 at the office, we thought we'd give a listen to a CD-ROM from Big Fish Audio called *The Studio Grand*. Admittedly, sampling a grand piano is one of the toughest challenges a sound developer can face, but this disc had too many problems for us to whip up any enthusiasm . . . until we saw the price tag. For $99, the disc has a couple of very reasonable piano multisamples in it.

The first of two 32Mb volumes on the disc contains one piano (called C7, which we're guessing means it's a Yamaha grand). Two performances are provided, one stereo and one mono. Each performance provides three-way velocity-switching between three patches, designated "p", "mf," and "f." The most immediately obvious problem is that the *piano* piano is much more muted in tone than the *mezzo-forte* piano. The result: If you play at a semi-soft, lyrical volume level, occasional notes will "pop out" unnaturally because they'll trigger the mid-level sample. The same problem is apparent in the second 32Mb volume, which is only two-way velocity-switched. We would not recommend this piano for solo work, as it is basically uncontrollable.

A more subtle but telling difficulty is that the three sets of samples in the first volume appear to have been gain-normalized, but not enough compensation was programmed into the patch levels. The result: The *forte* piano isn't loud enough compared to the *piano* piano — and as its tone dies away, it gets quieter more quickly (due to the natural variations in envelope shape within a single note). In the bass register, the *forte* piano samples die away to a point where the loop consists mostly of bell-like high overtones. Those overtones are present in a piano string, but we've never heard them ring like this without a trace of the lower harmonics. Again, it's a very unnatural sound. (The same samples are used in the volumes that have only *forte* pianos.)

In the upper register, there's quite a bit more hammer thwock in the *piano* piano samples than in the *mezzo-forte* ones, which has the odd result that as you play harder, the sound becomes *less* percussive. Also, the sample zones in this register don't always have the same root key, so as you play harder or softer the hammer thwock will change in pitch. It's just not a realistic piano effect.

We could talk about marginal multisample matching in the low register, or the fact that the upper-register harp resonance overtones are tuned at a different pitch in the *forte* piano than in the others . . . but that would be cruel. All we can say is, the loops are terrific. No kidding. Some of the smoothest, most musical bass register long loops we've ever heard in a sampled grand.

The best volumes on the disk are "S. Grand f" and "S. Grand mf." No velocity-switching problems, and a nice rich tone. Two of our listeners commented that these pianos were very pleasant and would work well in a pop mix, but nobody wanted to play an unaccompanied solo on them. Overall, they're bright enough, but the melody range doesn't have enough overtones to sing well at high velocities.

We spotted other problems in "S. Grand f" as well. The sample two octaves below Middle *C* is tuned slightly sharp, but you can fix that by adjusting the fine-tune parameter at the partial level to –4. The sample two octaves above Middle *C* has a problem that can't be fixed: One of the strings on the piano was out of tune with the other two when the sample was taken, resulting in a slight honky-tonk effect.

Terrific loops, though.

—Jim Aikin

W.D. COAKLEY PERFECT PIANO SERIES

SOUND QUALITY: ★★★★
PLAYABILITY: ★★★★★
BANG FOR THE BUCK: ★★★★

Overview: Amazing Steinway and Kawai grand pianos in 16Mb banks.
Contents: Five Steinway banks, two Kawai banks.
Retail Price: $299 (CD-ROM: SampleCell II, Kurzweil K2000, Akai, Roland, and E-mu EIII formats).
Contact: W.D. Coakley, 913 Fifth Ave. S., Lake Worth, FL 33460. (800) 742-6625. Fax (407) 547-8205.

CD-ROM (SampleCell II, Kurzweil, Akai, Roland, E-mu): PERFECT PIANO

Our "do just the opposite" award for this month goes to Bill Coakley's CD-ROM. Like the Big Fish CD reviewed above, it contains only grand piano multisamples. The difference is, the best thing about the Big Fish pianos is the wonderful smooth loops. The only *bad* thing about the Coakley pianos is the loops. In every other area, this CD might as well be the real thing. You could probably get André Watts to play some Chopin on it, and as long as the sampler was hooked to a decent weighted-action controller nobody but a record producer would be able to tell the recording wasn't made on a piano. It's that good.

We happened to use the SampleCell II version for our review, so we can't testify about the envelopes, filtering, and velocity response in other samplers, but what we heard was incredibly responsive and realistic. We could play quiet singing lines, we could bang out thick chords in the bass register, we could flash through dizzying runs in the top octave (well, some of us could. . .), and these pianos hugged the curves and roared down the straightaway. Coakley apparently spent a lot of time getting the right balance between close-miking of the strings and miking of the resonance from the case. Then he spent more time matching the samples. True, everybody who samples a grand piano spends "lots of time" on it, whatever that means. Maybe Coakley has an edge because he was trained as a piano technician.

About those loops, though. Most piano samples these days use long loops, especially in the low register. With careful crossfading between the start and end of the loop, it's possible in a loop that's a couple of seconds in length to get a halfway reasonable facsimile of the overtone activity in a vibrating string. Instead of this approach, Coakley chose to do short loops. We won't call them single-cycle, because some may contain four or eight cycles of the original, but they're sure way short. The first couple of seconds of each note sound wonderful; the attacks are long. But when the sample enters the loop, the tone goes dead. The loops are smooth and in tune, so technically speaking maybe we shouldn't call them "bad," but musically they're way below par.

To hear such a great attack followed by such an awful loop is almost physically painful. And the phenomenon isn't limited to the low bass register; you can hear it way up in the neighborhood of Middle *C*. Sometimes certain overtones shift up or down slightly in pitch when the loop starts — an inevitable result of the fact that in the attack portion of the sample these overtones are sharp or flat relative to the fundamental. In a short loop, they turn into whole-number multiples of the fundamental, a distressingly audible shift.

To be fair, in passages where anything else is happening musically — a right-hand run or the rest of the band, for example — your listeners probably won't notice the bad loops. But that's making excuses. With such great sampled material, there's no excuse for needing to make excuses.

As long as you don't need to sustain any notes longer than a couple of seconds, though, this is *the* sampled piano to own.

—Jim Aikin

ROLAND SR-JV80-04 VINTAGE SYNTH EXPANSION BOARD

SOUND QUALITY: ★★★★★
SELECTION: ★★★★
BANG FOR THE BUCK: ★★★

Overview: Classic synth sounds

sliced and diced with '90s-era synth technology.

Contents: 8Mb containing 255 vintage synthesizer, Clavinet, Mellotron, and Hammond B-3 "waveform" selections. 255 patches for Roland JV-series synths, 510 patches for Roland JD-990.

Retail Price: $445.

Contact: RolandCorp US, 7200 Dominion Circle, Los Angeles, CA 90040-3647. (213) 685-5141. Fax (213) 722-0911.

ROLAND VINTAGE SYNTH EXPANSION BOARD FOR JV-SERIES SYNTHS & JD-990

Back in 1991, InVision released Protologic for the E-mu Proteus/1 synth module. It was the first internally installed board that provided additional synthesizer waveforms. Now Roland has further developed the concept to come up with expansion boards that contain waveform and patch data for many of their current synthesizers: the JV-80, -90, -880, and -1000, as well as the JD-990. Five boards are available, one each dedicated to producing pop, orchestral, piano, "world," and vintage synth sounds. The main benefit of this implementation is that more memory can be squeezed into such a board than into a PCM card. On the downside, you can only install one board in a synth at a time; at least with a PCM card, you can quickly pull one card and insert another. (All of these Roland synths also have PCM and patch card slots.)

When we heard that Roland had added a vintage synth board to their line of accessories, we just had to get our hands on it. The manufacturer also provided a JV-90 for this review. Although there's plenty of good stuff on the board for a JV synth, you get even more if you have a JD-990, because the board contains twice as many new patches for that machine. We're told that the 990 patches take advantage of that synth's ability to perform hard oscillator sync and ring modulation.

Many of the patches you get with the vintage synth board impel you to keep playing. Rather than stark, plain recreations of old instruments, most of the patches take full advantage of modern synth technology, featuring layered voices and aftertouch response, and utilizing the built-in reverb and chorus effects. (One of our reviewers commented that it would have been great to hear more of the classic waveforms in more pristine, less gimmicky patches.)

As you might expect, plenty of old synths are emulated by this expansion board, including the ARP 2600, Oberheim OB-X, Sequential Prophet-5, Minimoog, and Yamaha CS-80. Lots of Rolands, too: JP-8, JX-3P, SH-101, Juno-60, MKS-80 . . . and one of the more recent inductees to the Vintage Synth Hall of Fame, the D-50. Not that you'll necessarily like all the accurate representations of old synths. Take, for example, 2.3 Glass SEQ, a simulation of the PPG Wave 2.3. The patch sounds thin and somewhat bell-like, but not very satisfying. Equally insipid is VS Organbell, which is about as sweet and digitally lifeless as an organ sound can get. On the other hand, there are some excellent analog synth simulations, such as the cutting Polysync and its chorused and more animated cousin, Wavesync. Another standout is the crisp and biting Waspy Synth, a recreation of the little yellow-and-black touch-keyboard synth from England.

In addition to a number of old synths, you get renderings of a few prehistoric electroacoustic instruments, such as the Mellotron and Hammond B-3. (We miss having some electric piano samples to fill in for the Rhodes and Wurlitzer EPs, but there are a few Clavinets.) Of the nine Tron patches, StrawberyFlt stands out. With this dialed up, you're ready to launch into "Strawberry Fields."

We're disappointed in the six B-3 patches because of both their wimpy sound and the poor Leslie simulation. Although the tones are organ-like in timbre, they aren't beefy enough. Even DirtyPurple, which bears no resemblance to what Deep Purple organist Jon Lord played, sounds anemic. The Leslie fails mainly because the modulation speed jumps immediately from slow to fast and vice-versa, rather than taking time to change speeds. While in some patches the mod lever and aftertouch control the effect, in Velo Rotary, notes played with a higher velocity have fast Leslie-like modulation. Although interesting in concept, this is wholly unrealistic, because you can get both slow- and fast-modulating notes at the same time.

Among the Roland instruments represented in the vintage synth expansion board, our fave is VP-330 Choir. The VP-330 was a vocoder, and this patch harks back to the days when Mellotrons and keyboard-driven vocoders helped fill out a band's vocals. VP-330 Choir strongly evokes memories of Isao Tomita's synthesized orchestral renditions of pieces like Stravinsky's *Firebird Suite*. We also really like 101OwBass, a punchy SH-101 bass timbre with aftertouch assigned to open up the filter and add vibrato. If you change pressure slowly, you hear the filter's resonance step rather than sweep smoothly because the cutoff frequency is so low; it's very subtle, but a common detriment to digital as opposed to analog filters.

Aftertouch is active in almost every patch. While it's often assigned to traditional destinations such as filter cutoff, vibrato depth, and voice amplitude, it sometimes controls unexpected parameters. For instance, in Prologue — a soft, floaty patch that plays a fifth on top of the root note — pressure brings in a secondary LFO-to-amplitude-modulated voice that stays constant while the original voice slowly fades in and out. Pressure has a profound effect on Poly X-pandr: With no extra pressure, it sounds like a typical fat, analog Oberheim patch; push down and its amplitude starts fluctuating in a mad 16th-note pattern. Amplitude modulation is also put to effective use in Nervous Pan, which beats incessantly regardless of the pressure you exert on the keyboard. Aftertouch opens up the filter on this extremely playable patch.

Roland's vintage synth board also provides a few arpeggiator-like patches. ArpeggiBs+12 is a flabby, square-wave bass patch in which each note that you play sounds a four-note octave trill. The notes in this pattern will sound regardless of how long you hold the key(s), and sustaining the note won't continue the pattern — it only plays once. But playing and releasing the key quickly will cause the notes in the pattern to play staccato. By far the coolest of the arpeggiated patches is Playmate. Here, the time that elapses between notes determines the tempo of a pattern that plays the root twice followed by a perfect fifth and the octave above it. If you play an isolated note, you may not hear any arpeggio. The more notes in succession you play, the faster the arpeggio. This is fun!

It's too bad Roland doesn't provide better documentation with the expansion board. Beyond the waveform and patch lists, all you get are rather obscure installation directions. Of course you could take the instrument to your music store and let them install the board, but that isn't always convenient.

If you own a JV-series or JD-990 synth and want lots of vintage waveforms and cool patches, Roland's vintage synth board could be just what you need. —*Mark Vail*

EYE & I VOICE CRYSTAL

Overview: A little of everything.

Contents: 100 single programs, 100 combis per card or disk. Set of five cards available.

Retail Price: $55.95 per ROM card ($175 for set of 5 cards). X3 disks: $30 per disk.

Contact: Eye & I, 930 Jungfrau Ct., Milpitas, CA 95035. (408) 945-0139. Fax (408) 945-5712.

SOUND QUALITY:	★★
SELECTION:	★★★★
BANG FOR THE BUCK (03R/W ROM CARDS):	★★★
BANG FOR THE BUCK (X3 DISKS):	★★★★

VOICE CRYSTAL KORG 03R/W & X3

Traditionally, Eye & I's Voice Crystal patches are a mixed bag — a little of everything on each card rather than a dedicated "new age" or "techno" card. Also part of the mix: a few excellent sounds crammed cheek by jowl with material that's frankly just not inspiring. The charitably inclined might defend these patches by saying that they're meat-and-potatoes, useful stuff, just not innovative or stimulating. But how charitable can you be about a patch like Piano Pad, which happens to be program 01 on Voice Crystal card 1 for the Korg 03R/W?

Let's dissect this patch. It's a very standard concept — piano layered with strings. You'll hear its kissing cousins in plenty of hit ballads. This particular patch, however, is a stinker. First, the piano tone sustains way, way too long. High-velocity notes ring for upwards of 30 seconds, with a wide-open, unfiltered tone. The string tone is likewise devoid of filter contour; its only shaping comes from the amplitude envelope, which has a quick, gritty attack — just what you want for a nice romantic pad, right? On top of which, the first effect processor is set for a bit of reverb, while the second is set for . . . no effect. We would have dialed up a nice rich chorus algorithm for starters, and then zeroed in on the filter envelopes.

This patch happens to be particularly egregious, but it illustrates

the kind of technical lapses that we spotted throughout the 03R/W set. With five cards to choose from, there may even be two cards worth of really excellent sounds here, but the only way to get them is to buy the whole set. Most of the patches can be made far more musical with a bit of tweaking . . . but not everybody who buys them will be a veteran synth programmer.

The good, solid patches in card 1 include Cybergenik, a digital-sounding bass with room reverb, Microwaves, a warm bowed digital timbre suitable for mellow leads or counterpoint lines, and Dem Bones, in which a rhythmic bell pulses in octaves. We also liked GargleClav, another slightly bowed digital sound; not much velocity response, but it has a nice sparkle. Sir Duke layers brass with sax — a bit nasal, but plenty of animation for those section stabs.

In general, this card suffers from a lack of velocity response; some patches have none, others have it only on one of two oscillators, or only on the filter but not on the amplitude. Sequential, an electronic beeper, has no velocity, aftertouch, or even mod wheel response! (It's not the only patch with no aftertouch or mod wheel, either.) The assumption behind Stevieland seems to be a Clavinet, but it sustains indefinitely, which is very unClavinetlike.

Among the combis, BigBandEra has too much reverb, but in general the brass layers are among the better combis. (Oddly, the combi called BrassCombo is another stinker. It sounds like a home organ "muted trumpet.") Way too many combis in this card rely on the damn barber-pole gimmick sample — Super Nova, Buchula, Sun Spots, and A New Dawn, among others. How fast can you get tired of an effect? The best combis are gentle new age layers like Mr. Sandman.

On the second card, we liked Hammer D, a hammered dulcimer with chorusing that invites you to write a new folk song. Also excellent: Repeat Syn, a rich electronic timbre with square-wave tremolo and stereo echo, and SynSeqStrg, a string pad that pulses in a more complex way. ModCtrlVox is a synthy wave that "talks" very expressively when you use the mod wheel. There's some nice new age material, such as Sedona, whose echoing harp is followed by a delayed chime, CloudVoice, a rich muted choir, and Cymbarimba, which is basically a pipe organ sine sustain following a brushed metallic chiff, are both very pleasant. On the other hand, we would rather have been spared TomitaBell, an upward pitch swoop that lost its novelty value in about 1981.

On more than one card we noticed velocity switch combis in which a lower-octave sound drops out at high velocities, leaving only a layer in a higher octave. This seems quite weird to us, because when you play hard, the notes have less body. In one case, East Wind on card 3, this led to a programming mistake: At high velocities, the right-hand timbre disappears entirely.

Card 3 has more of the same. The shimmering choir of AngelsPad and the eerie descending twitters of FallenStar are luscious, but then you hit a patch like Clav 16', which sustains forever with no enveloping. Or consider combi Mute Gtr: It's a multi-octave layer that uses two programs, MuteGuitar and SoftGuitar. This is a combination that you might think would work well if you were doodling on a napkin. The trouble is, the pick attack of SoftGuitar is entirely covered by the pick attack of MuteGuitar. All you hear of SoftGuitar is a long, tweezed-out treble decay. This decay sounds okay in the single program, because it's running through a chorus effect. In the combi, it lies there cold and dead. The WinterBell combi is an utterly dreadful combination of bright, trembling strings and a basic, useless tubular bell. You can't play chords with it because of the clash in intonation, and you don't want to sustain a single note because the string tone is too nervous-making. What's it good for? Beats us.

We spotted a couple of cool effects programs while stepping quickly through card 4, including the nightmare pitch and filter modulation of Hypnosis and the ominous crickets and choir of Ghostown — but by then the jury had already returned its verdict. If you've got an X3 and don't mind doing some of your own synth programming, the Voice Crystal disks might be a good bet, because you can use their programs as starting points, do a little editing, and save your improved versions to disk. With ROM cards on an 03R/W, this isn't an option, and the ROMs are also more expensive than disks, so we really can't recommend the cards.

—Jim Aikin

Continued from page 94

veloped by Jean-Marie Adrien and Joseph Morrison, is a modular software toolkit for modal synthesis. In the world of MOSAIC, you sit before a virtual workbench with a collection of *objects* that you assemble into instruments. The objects include strings, air columns, metal plates, membranes, and violin and cello bridges. Other objects, such as bows, hammers, and plectrums, excite the instrument.

Interactions between objects are called *connections*. Connections can be thought of as black boxes that go between objects and specify a relationship between them. For example, two objects can be connected by means of glueing, bowing, plucking, striking, and pushing. Attached to each connection are *controllers* — knobs that stipulate the parameters of the control. A bow connection, for example, has controllers for speed of bowing, amount of rosin, and so on. Finally, a physical location on an object is called an *access*. To connect two objects, for example, one specifies their access points.

Figure 3 depicts a plucked-string instrument in MOSAIC. Strings, picks, and position controllers are basic objects. The objects are connected at specified access points: *Position*, *Pluck*, and *Output*.

The MOSAIC system is an elegant programming model. However, its long calculation times push it far from real time, even on high-performance workstation computers.

MCINTYRE, SCHUMACHER, & WOODHOUSE SYNTHESIS

The McIntyre, Schumacher, and Woodhouse (MSW) model was proposed in 1983. The authors were research scientists who were not so concerned with practical problems of digital sound synthesis. Rather, they were interested in developing a scientifically convincing *time-domain* model of acoustic tone production. To do this, they studied the birth and evolution of waveforms and the physical mechanisms behind these phenomena.

Prior to this research, researchers tended to stress the importance of resonances in determining the sound of instruments. But this *frequency-domain* orientation did not account for important details in the instrument's waveform, such as the attack transient — an acoustic signature that is essential to our recognition of the source of a musical tone. The MSW approach gives insight into the reasons for waveform variations in a range of instruments and accounts for such phenomena as pitch flattening in bowed strings, subharmonics, and the duration of the attack transient.

MSW synthesis divides tone production into two main parts: a *nonlinear excitation* and a *linear resonance* (Figure 4). In the MSW model of a clarinet, the nonlinear excitation is caused by blowing into the clarinet mouthpiece, where the reed acts as a kind of switch, alternately opening and closing to allow the flow of air into the resonating tube (clarinet bore). The switching action is caused by pressure variations in the mouthpiece.

The reed is half-open at the start, but the flow of air into the mouthpiece creates pressure in the mouthpiece that closes the reed. This in turn gives the air a chance to escape from the mouthpiece into the bore and out the open end of the clarinet, which opens the mouthpiece again. Hence the reed converts a steady flow of air into a series of puffs. The frequency of the puffs is determined by the effective length of the bore, which is varied by opening and closing keyholes. That is, the waves in the bore resonate at the pitches playable by the clarinet. The mass and stiffness of the bore give it almost complete domination over the reed in determining pitch. This interaction constitutes a kind of feedback from the resonator to the exciter, as shown in Figure 4. Thus the MSW model accounts for exciter/resonator coupling.

In the MSW model of bowed strings, for example, nonlinear switching occurs when the friction of the bow "captures" the string for a brief interval until the string slips and is "released" by the bow. Then friction builds again, and the string is again "captured," and so on. In a flute or an organ pipe, the nonlinear excitation is caused by air pressure buildups in the short end of the tube. When the pressure buildup is high, the force of its release overcomes the incoming airjet and causes a brief interruption in the air flow into the tube.

In all three of these cases (woodwinds, bowed strings, and pipes), the excitation is a nonlinear switching mechanism that sends a sharp impulse wave into the linear part of the instrument. The linear part acts like a filter to round the waveform into the characteristic timbre of the instrument.

Although various implementations of MSW synthesis have been developed, the sound produced by the MSW model is not terribly realistic, due to its many simplifications. Several researchers, notably Douglas Keefe at the University of Washington, invested much effort in refining the MSW model to make more convincing instrument tones. Perhaps the main contribution of MSW synthesis has been theoretical, however, explaining many obscure details of tone production. The literature around the MSW approach was absorbed by researchers working on more commercially exploitable waveguide methods.

WAVEGUIDE SYNTHESIS

Waveguides are a very efficient way to implement PM synthesis. A waveguide filter is a com-

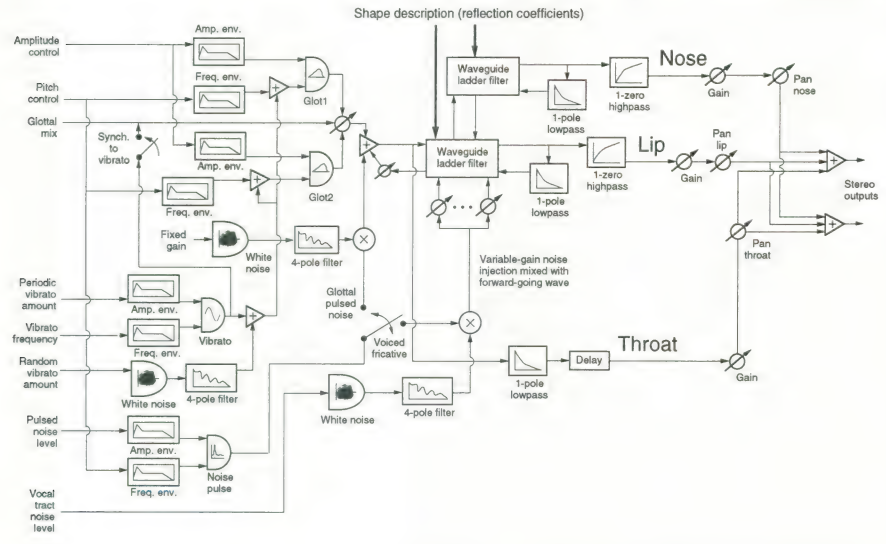


Fig. 11. Block diagram of Singer, a physical model synthesizer for vocal sounds (see page 99). The left side of the figure depicts the excitation sources. The middle part depicts the waveguide resonators. The right side depicts the output stage. Two glottal wavetable oscillators (Glot 1 and Glot2) allow slow, vibrato-synchronous variations in the excitation signal. The glottal noise source consists of filtered white noise, multiplied by an arbitrary time-domain waveshape synchronized to the glottal oscillators. This model permits pulsed noise to be mixed in with the periodic source. A sine wave oscillator simulates vibrato, where the frequency of the vibrato is randomized by noise. Filtered white noise is injected into the forward-moving glottal wave. The noise can be inserted into any number of waveguide sections, each with independent level controls. The mixed glottal source feeds into the vocal tract filter. Glottal reflections are modeled by a simple reflection coefficient, and a lowpass filter simulates lip and nostril effects. A lowpass filter and delay line model the radiation from the skin in the Throat output path.

putational model of a medium, such as a tube or a string, along which waves travel. Waveguide models have long been used by physicists to describe the behavior of signals in resonant spaces, but Julius Smith and his colleagues at Stanford University were the first to apply them to musical sound synthesis.

A basic building block of waveguides is a common algorithm that is easy to program — a pair of *digital delay lines*. Each delay line is injected with an excitation wave propagating in the opposite direction and reflecting back to the center when it reaches the end of the line. A delay line is a good model of this process because wavefronts take a finite amount of time to travel the length of a resonating medium. Traveling waves running up and down the waveguide cause resonances and interferences at frequencies related to its dimensions. When the waveguide network is symmetric in all directions, the sound it produces tends to be harmonic. If the waveguide twists, changes size, or intersects another waveguide, this alters its resonant pattern.

Voices and instruments such as brass, woodwinds, and strings can be simulated by means of oscillators driving a waveguide network. Guy Garnett, a student of Smith, built a simplified model of a piano out of waveguides.

An attractive feature of waveguides is that they are compatible with existing software synthesis languages developed in computer music research centers. That is, the building blocks of waveguide networks can be merged with standard synthesis modules such as oscillators, filters, and envelope generators. Not surprisingly, the SynthKit synthesis language developed by Korg includes waveguide elements such as **reed**, **bow**, **brass**, **hammer**, and **junction**, alongside traditional unit generators such as oscillators and filters.

HOW WAVEGUIDES MODEL SPECIFIC INSTRUMENTS

Let's turn next to waveguide models of plucked strings, a generic waveguide instrument that can simulate either stringed or wind instruments, and more specific models of a clarinet and a horn.

The simplest waveguide model is a single string or monochord. The waveguide portrays what happens when a string is struck at a particular point: Two waves travel in opposite directions from the impact point (Figure 5). When they reach the bridges, some of their energy is absorbed, and some is reflected back in the opposite direction — toward the point of impact and beyond, where the two waves interact, causing resonances and interferences. In the parlance of waveguide theory, the bridges act as *scattering junctions* since they disperse energy to all connected waveguides. The pitch of the vibrating string is directly related to the total length of the waveguide.

Figure 6 shows a generic model of a simple waveguide instrument capable of modeling string or wind instruments, after a design by Perry Cook. A sharp nonlinear excitation wave is injected into a delay line. It travels until it hits a scattering junction filter, which passes some energy on and bounces some energy back. The scattering junction models the effect of a finger or bow pressing on a string, or a tonehole on a wind instrument. The filter at the end models the effect of the bridge, body, or bell of the instrument. In order to approximate a noncylindrical tube such as a horn or the vocal tract, the tube is modeled as a series of equal-length sections, each of which is represented by a separate waveguide. Thus a series of waveguides can approximate any tubular shape.

For brass and woodwind instruments, the mouthpiece or reed that generates the excitation is modeled either by a simple oscillator or by a more complicated nonlinear oscillator driving the waveguide network. The nonlinear oscillator works according to a mass-spring-damper mechanism. This same scheme can also be applied to string synthesis; here, the nonlinear oscillator models the interaction between the bow and the string.

Figure 7 shows a waveguide model of a clarinet, after a design by Hirschman, Cook, and Smith. The clarinet model has five parts: the reed, upper bore, register hole, lower bore, and bell.

Only a single hole is needed because the size of the upper and lower bores change according to the pitch being played. This model produces a clarinet-like tone with several realistic features, including the generation of harmonics according to input amplitude, and instrument squeaking given appropriate inputs.

Figure 8 shows a screen display for Perry Cook's brass instrument simulator TBone. The three windows are the French Trumbuba Controller, Performer Controller, and Time-Varying Event Controller. The French Trumbuba Controller at bottom provides graphical controls for modifying the instrument. Graphical potentiometers control the position of the slide, the flare of the bell, and individual sections of the mouthpiece. Text fields let users specify the length of the bell, the slide, and each section of tubing associated with the four valves. Clicking the valve buttons toggles them between the up and down positions, and causes the appropriate piece of tubing to be inserted or removed from the acoustic circuit.

The waveform display shows the spectrum of the impulse response of the current horn setup. This is often called the *transfer function* and describes the gain each frequency would experience in a trip through the horn system.

The Performer Controller window at upper right provides controls for modifying the model of the brass player's lip. Simple controls of mass, spring constant, and damping are sufficient to set the natural frequency of the lip oscillator. The transfer function of the lip is shown in a spectrum display. When the "Toot" button is pressed, the instrument synthesizes and plays a short note. The "Play" button causes the same sound file to be played again.

The Time-Varying Event Controller at the upper left has controls for time-varying sound synthesis. By typing in begin and end times ,one can specify sweeps of the lip and slide and valve trills.

CONTROLLERS FOR PM SYNTHESIS

Graphical interfaces provide a good visual picture of a PM instrument, but it is very difficult to play such an instrument in a realistic manner with only a mouse and an alphanumeric keyboard, due to the need to control many parameters simultaneously. Some work can be done to group parameters, but for effective performance the musician needs to play several *controllers* (or *input devices*) at once or a single controller with several degrees of freedom.

Yamaha's VL1, for example [see Keyboard Report, June '94], is supplied with a special breath controller worn like a microphone headpiece. The instrument is usually played with the right hand on the keyboard, the left hand on one of the three controller wheels, and either one or two feet on pedals. The VL1 also works well with the combination of a Yamaha WX11 wind controller and a footpedal. Notice how PM techniques have come almost full circle: from an actual instrument to a virtual instrument played using a physical controller.

Standard keyboard controllers are hardly the last word. Perry Cook's prototype HIRN (Figure 9) combines parts of several different types of controllers (mouth interface, buttons, sliders, different blowing angles) into a unique device.

Starting from the premise that force feedback from the instrument helps players develop their technique, the ACROE group in Grenoble, France, builds *responsive controllers* (powered by digitally-controlled electrical motors) that simulate the physical action of various types of instruments.

THE AUTOMATIC PERFORMANCE PROBLEM

Building an accurate model of an instrument is a major scientific project. Only a few laboratories have the necessary equipment and expertise. Thousands of different types of acoustical instruments exist in the world, yet only a handful of PM models have been attempted. Once a model is constructed, the issue remains of determining the proper settings for dozens if not hundreds of parameters

for each sound.

A fundamental problem of PM synthesis is the fact that an instrument alone is not a complete system of sound production; instruments need players. Initial attempts to play PM instruments sometimes sound like the painful practice sessions of a novice. For each instrument created, much effort remains in order to learn how to play the instrument well.

Yet one of the advantages of digitally-controlled instruments is that we can program them to play in a manner that would be difficult to realize by human performers. Driven by a sequencer, a single synthesizer may realize dozens of different timbres with a precision that would be impossible without digital control.

But how to program a sequencer for realistic control of a PM instrument remains an open question. If the instrument is driven by software rather than by a musician, one must, in effect, define a physical model of a player as well as of the instrument. This player model should be able to realize idiomatic gestures and good playing technique — in whatever way these goals are defined for a particular instrument. Tentative steps toward player models have been taken, but much research remains to be done.

Given a model of a traditional instrument, the task of developing a player model could be aided by an analysis system that extracted parameter settings from instrumental performances. The next section surveys the first steps toward developing an analysis stage for PM synthesis.

PM ANALYSIS/RESYNTHESIS

All sound analysis can be seen as a form of *parameter estimation* (PE). That is, analysis tries to characterize an incoming sound in terms of the parameter settings that would be needed to approximate that sound with a given (re)synthesis method. Given a physical model of an existing instrument, the usual method of determining performance parameters is to carry out laborious trial-and-error experiments on individual tones, transitions, and gestures in collaboration with accomplished players, which is what Yamaha has done. This detail work might be greatly speeded up by an analysis stage that could listen to a performance of a virtuoso and estimate the characteristic parameters automatically.

Another motivation for an analysis stage in physical modeling is *automatic instrument construction*. Existing physical models correspond to only a tiny corner of the universe of sound. What about sounds that are not currently realizable with existing models? One might dream of an automatic compiler that would create a virtual instrument for any input sound — even a synthetically generated one. This artificial physical model would give the musician gestural, "instrumental" control over this sound and a family of related ones. Such an idea may seem far-fetched, but keep in mind that Fourier analysis already acts as a similar sort of compiler, estimating the parameters of an additive synthesis instrument corresponding to any sound fed into it.

Working at the University of California at Berkeley, Erling Wold wrote an important study in PE for PM resynthesis. His ultimate goal was not synthesis *per se*, but separation of polyphonic sources. That is, the system was fed a mixed signal originating from two different instruments. It then tried to estimate what the resynthesis parameters would be for each instrument, with reference to a physical model synthesizer, rather than an additive synthesizer, for example.

He began by designing approximate physical models of acoustic instruments such as voices, marimbas, and clarinets. For any given input sound, the goal was to compare the input sound with the model and try to identify a

combination of parameter settings that would result in the same sound.

Figure 10 diagrams Wold's parameter estimation system. The first part of the system addressed the problem facing all estimators — making an educated guess as to where to start. It started with a *fast preanalysis* using spectrum analysis and pitch detection. Based on the initial estimate, the system refined its analysis using iterative techniques and checked its results against a model for resynthesis.

Unfortunately, the computational requirements of this type of procedure — Kalman filter estimation of PM synthesis parameters — are astronomical: billions of computations per second of analyzed sound. Wold concluded his thesis with a discourse on new types of computer architectures that would be required in the future to realize these methods in real time — about a million times faster than current processors.

CONCLUSIONS

PM synthesis has made dramatic progress in recent years. Some have predicted that PM toolkits are the future of digital synthesis. A conceptual problem remains, however, in that there is a universe of sounds for which no one has yet built a model. Thus it is likely that PMs will coexist alongside other methods that are cheaper, easier to play, and not least, offer sonic transformations that are impossible with PM. One of the goals of electronic music has always been to open up the sonic palette, to go beyond the sonorities of traditional instruments. Techniques like analog synthesis, granular synthesis, and vector synthesis, to cite just three, offer colors that no acoustic instrument (or its physical model) can hope to emulate.

The advent of PM toolkits, such as Korg's SynthKit, makes possible a do-it-yourself approach to instrument design. But developing a robust model of an acoustic instrument will never be easy. Even if one has the proper patch, the problem remains of ascertaining the proper values for dozens of parameters for each note and playing style. Matching an arbitrary sound to parameter settings for an arbitrary model remains an obstacle to PM. Parameter estimation techniques may help, but their enormous computation times will pose a barrier for years to come. By contrast, more practical analysis techniques like the phase vocoder can generate good additive synthesis approximations for a range of sounds. Exotic research tools ten years ago, phase vocoders are now widely available as shareware for popular computers.

Rather than viewing PM synthesis as a "universal synthesizer," we should appreciate it for its strong points: expressivity, playability, and more realistic gestural phrasing. These are virtuoso players', not virtuoso programmers', instruments. By linking PM to external MIDI control, companies such as Yamaha have opened up a range of performance possibilities using any type of MIDI controller.

One of the next steps for PM synthesis could be a playable human voice. For practical reasons, this might emulate a scat singer ("sha ba da ba doo wow") or another style that is not dependent on language. A recent example is Perry Cook's Singer, a PM of the human vocal tract. Singer contains models of the lips, vocal tract, and nasal tract, allowing it to capture articulatory details more realistically than traditional subtractive synthesis methods. The complexity of the model is evident from the patch in Figure 11.

Formidable issues remain in making a practical vocal instrument. How can dozens of model parameters be reduced to a few playable ones? How can the musician control these in a natural way? What is a good input device for a vocal mechanism? And on whose voices will the model be based?

By the way, the Anthropoglossos was a hoax. ■

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KEYBOARD REPORT

ENSONIQ TS-12 SYNTHESIZER

By Ernie Rideout

Updates may be commonplace in the software industry, but they are much less so in the electronic musical instrument business. More common is a repackaging of existing hardware with little or no change in functionality. Same old same old, in a different box.

In this regard, the TS-12 synthesizer is unusual. Not only is it a new combination of Ensoniq's most recent workstation technology with a weighted, 76-note keyboard, but it comes with a fairly significant operating system and hardware update, versions 2 and 3, respectively. Since the update is available for the TS-10 (see Keyboard Report, Sept. '93) as well as TS-12s shipped prior to the upgrade, this Keyboard Report will have two focuses: the keyboard of the TS-12, and the new system software. Everything we liked about the TS-10 is still here. The operating system, architecture, sequencer, modulation routing, and effects algorithms get very high marks. The ROM Pitch Tables provide a fantastic array of alternate temperaments. The fact that the TS reads Ensoniq EPS, EPS-16 PLUS, and ASR-10 sample disks gives it an enormous sound library. Being able to keep two banks of those samples in memory is a plus, as well. The TS's Wave-List feature lets you play up to 16 different waves in series with very interesting modulation potential.

The TS-12's ROM waveforms are also inherited from the TS-10, which had a few problems. The new operating system contains some modified factory program parameters and new user presets, but the sounds remain essentially unchanged. There are strengths among the sounds, which we'll delve into in a moment.

The new operating system adds several features that make it even easier to use the TS-12, such as improved program searching and sample memory management, automatic loading of samples, SCSI compatibility, and a tempo track in the sequencer section. The most recent update, version 3, with which all TS instruments are now shipped, adds a 16-part multitimbral General MIDI playback mode. And the keyboard, simply put, is great.

Our review unit came with the optional SP-4 SCSI interface installed, so we put that through its paces as well. Our time spent with the TS-12 was pleasantly glitch-free, due no doubt to the well-crafted software updates. With the TS-12, Ensoniq has done much more than simply rehash what they've already done; they've improved your choices for good gear.

Small is beautiful, but sometimes bigger is still better: Ensoniq's new TS-12 sports one of the nicest weighted-action 76-note keyboards around.

PROS

Great-feeling weighted-action keyboard. All the good features of the TS-10, plus some software conveniences.

CONS

No playback or recording of General MIDI or Standard MIDI File sequences. Heavy.

THE KEYBOARD. Having 76 keys is sure nice; when they feel as good as this, it's even better. The TS-12's weighted action, made by Fatar, feels solid. The keys are long enough to pass for piano-size, a major comfort to pianists. There's a healthy amount of resistance on the way down, yet they lift up fast enough that you can execute rapid repeated figures on a single key. For very soft playing, you won't have as much control as on a piano; without the action to counterbalance the key, that's just part of the difference between a

DESCRIPTION

Sample playback synthesizer/workstation.

KEYBOARD

76-note, weighted-action, *E* to *G*. Velocity, channel aftertouch. 12 programmable zones.

MEMORY

Synth: 6Mb waveform ROM, 2Mb waveform RAM (optional expansion to 8Mb using off-the-shelf SIMMs). 180 ROM programs, 120 RAM programs, 180 ROM presets, 120 RAM presets. 128 General MIDI programs, 33 ROM pitch tables. 692 pre-programmed variations on effects algorithms. Sequencer: 60 sequences/songs, about 30,000 notes (expandable to 97,000 notes). DD/HD disk drive.

FEATURES

32 oscillators. Wavetable sweeping, Wave-List sequencing, programmable microtonal scales. Three programs per preset, instantaneous program stacking in performance, patch select buttons. 12-channel multitimbral mode. Loads and plays samples and programs from Ensoniq EPS, EPS-16 PLUS, and ASR-10 floppy disks. 2 x 40 character LED display w/ six soft buttons.

VOICE ARCHITECTURE

Up to six oscillators per program, each with independent settings. One LFO, three five-stage envelopes per voice. Two non-resonant filters in series, one switchable to highpass mode for bandpass effects. Matrix-style modulation, envelope looping, real-time panning modulation, modulation of sample start point, reverse wave playback. Also contains complete Ensoniq EPS/ASR voice architecture for sampled sound playback and editing.

SEQUENCER

12 sequence tracks (sequences are chainable patterns) plus 11 linear song tracks and one tempo track (switchable to song track). 12-channel multimode recording. Audition mode for comparing new takes with previous takes. MIDI clock synchronization. Auto-punch and overdub recording. Percentage, swing and zone quantization. Track shift, controller scaling, event editing, event filter. 96 ppq clock resolution.

INTERFACING

Main L/R out, aux L/R out (any jack doubles as mono out), headphone out, pedal/CV in, two TRS dual footswitch ins (all 1/4"). MIDI in, out, thru. Optional SCSI port for read-only access to CD-ROM or hard drive.

DIMENSIONS

50-1/2" x 15-5/8" x 5". 55 lbs.

RETAIL PRICE

$2,995.00. SQX-70 Sequencer Memory Expander, $249.95 installed. SP-4 SCSI Interface, $249.95 installed. CVP-1 Control Voltage Pedal, $29.95. SW-10 Dual Damper Pedal, $49.95. MS-1 detachable music stand, $49.95 (available August 1994). TSD sound disks, 120 sounds/disk, $19.95 each.

CONTACT

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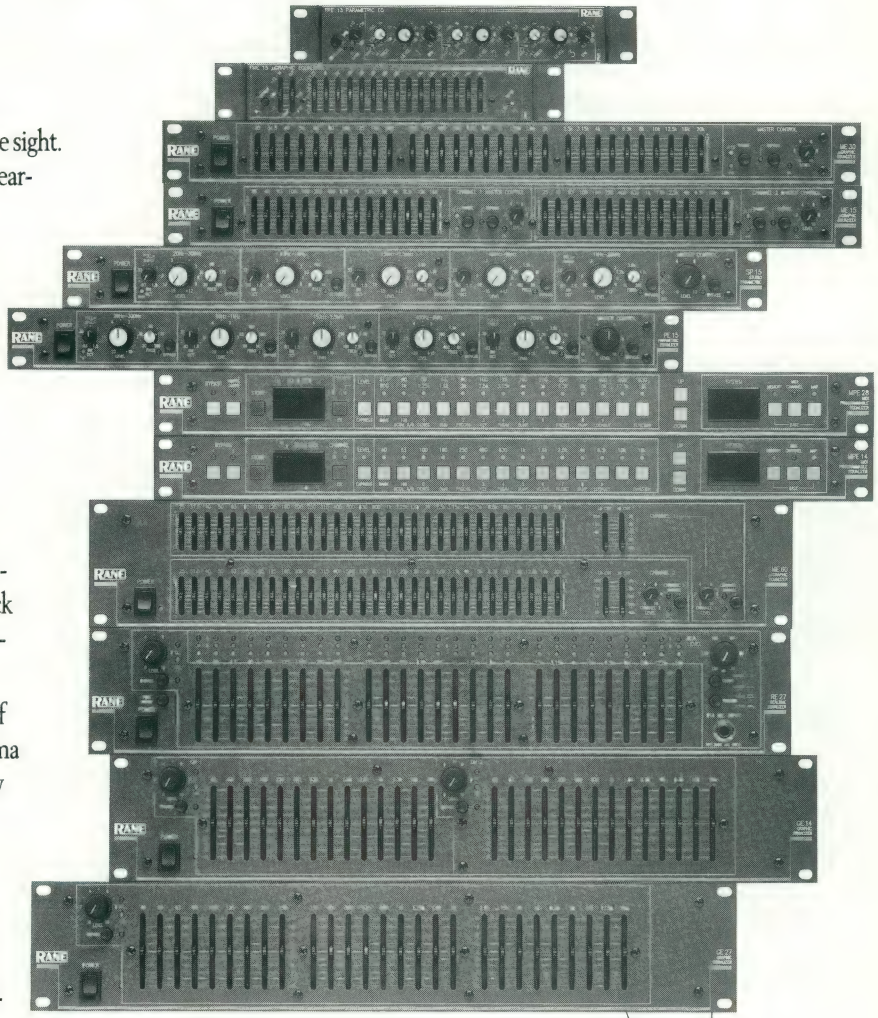
PHOTOGRAPHY: WARREN HUKILL

"LOOK NO FURTHER"



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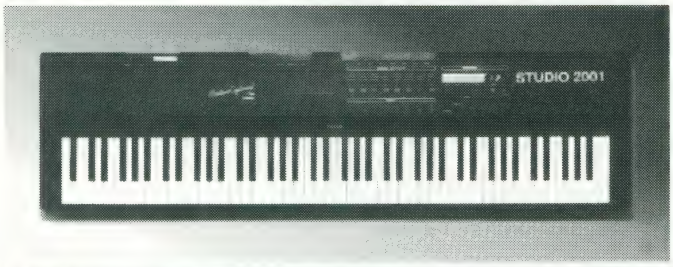

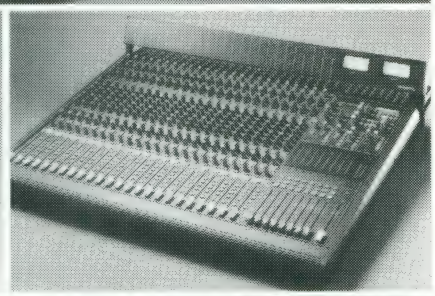

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weighted keyboard and real piano action.

To accommodate players of varying finger strengths, the TS-12 has six piano-style velocity curves. There are also six synth-style velocity curves, which are identical to the piano curves except that they will produce a note when pressed very slowly, whereas the piano curves will not. The curves differ mostly in the degree of shadings in softer dynamics and how easily it is to reach maximum dynamic levels. In line with Ensoniq's recommendations, those of us editors with less piano experience preferred the first curve, which provides maximum volume with a minimum of exertion; the pianists tended to choose either the fifth or sixth.

The reactions of those who tested the keyboard were uniformly positive. One editor felt that the TS-12's keyboard was as good as his all-time favorite weighted-action controller, the Yamaha KX88, although different. Other comments ranged from "the best ever" to "it's good."

While the TS-10's synth action keyboard (like those on most Ensoniq instruments) transmits polyphonic aftertouch, the weighted keys of the TS-12 cannot. The TS-12 responds to poly aftertouch received at the MIDI in port, but you can't record it from the TS-12 directly.

BRAVE NEW SYSTEM. There have been two operating system updates since we originally reviewed the TS-10. Version 2 features improved factory programs and software conveniences, most of which are detailed below. Version 3 adds General MIDI multitimbral ability. All new TS-10s and TS-12s ship with version 3, but if your TS-10 or TS-12 is an older model, installing version 3 (which includes the version 2 improvements) requires a $100 hardware upgrade.

THE SOUNDS. The TS-12's ROM waveforms are unchanged from the TS-10, which means that any aliasing, transposition artifacts, or poor loops present in the TS-10 are still apparent when you listen to the TS-12's sounds dry. Of course, faults are less apparent with programming, and the effects section in particular is excellent for rendering most of these problems less noticeable. Blemishes still stick out on a few programs, though, such as UPRITE BASS (zipper noise), HARPSICHORD (transposition artifacts) and ROCK ORGAN 2 (aliasing). In their defense, the rock organ programs stack up very well against the competition; few instruments can match the Leslie emulation that the TS-12 provides.

Version 2 provides several new programs, as well as many new preset splits. Among the splits you will find a wide variety of bass/keyboard, bass/organ, and keyboard/lead combinations, making the TS-12 good for gigging, right out of the box. Although not a version 2 feature, the drum and percussion sounds are strong as well, with a good variety of sounds among the various kits. GROOVE KIT, in particular, is killer. Ensoniq's drum map is appealing from a performance viewpoint, with kicks, snares, hi hats, and other sounds that you'd need to play rapid repeated patterns on assigned to multiple keys.

In terms of factory programs, the TS-12's sonic strengths lie in its drum, acoustic guitar, organ, keyboard, and synth sounds. The Wave List feature is tremendous, and that with variations on all programs accessible from the Patch Select buttons, you can put out a unique and stimulating bunch of sounds with this instrument. Less successful but still adequate are its acoustic wind, bass (elec., synth and acoustic), and string sounds, of which there are a modest selection. The pianos tend to sound like they're EQ'd for a rock mix rather than chamber music. Ethnic percussion in general is good, although the congas have an unnatural tuning.

Just considering its factory sounds, the TS-12 offers a decent selection for sequencing a fair variety of styles. If you find the palette lacking, though, you can load new sounds into the two banks of sample memory, in effect expanding the waveform ROM. With version 2, the TS offers a convenient way of doing this, namely, SCSI.

VERSION 2, AND SCSI TOO. The TS is certainly well prepared to handle floppy disks, what with its nifty disk storage wells. But if you want to get into the really big samples that Ensoniq and third party developers are coming out with, you'll want to purchase the SP-4 SCSI option. With the upgrade installed, you can read programs in TS, EPS, and ASR format from CD-ROM or hard disk.

Getting sounds from a CD-ROM into the TS-12 is no problem, but finding them in the first place might take some time, unless you take advantage of Ensoniq's Direct-Macro utility. Each file location on an Ensoniq Sampled Sound CD-ROM has a unique number that you can dial in to select a file quickly, without having to manually wade through the many hierarchical directories.

Speaking of finding and organizing sounds, version 2 adds a couple of handy utilities and amenities that make sound management easier. The SoundFinder is a handy software feature that lets you scroll through a list of sounds that are of a similar program type, so you don't have to hunt through bank after bank to find the right one. Whether in sound or sequencer mode, you can select among organs, pads, basses, or Wave List programs. You can even use this utility as the sequencer is playing, which is a great auditioning tool. The utility also indicates a program's location among the six that are shown in the display window when the instrument is in Sound (normal play) mode.

For managing samples, version 2 also implements an automatic sample loading feature that takes place upon start-up. The TS remembers the samples you had loaded before the last power-down, and if the floppy, CD-ROM, or hard disk is still connected, it'll load the samples right back in if you answer "yes" to the prompt. If the correct disk isn't present, it will ask for it. Another nice update feature allows you to save sample location data with a sequence and song file, so the TS will ask if you want to load samples and sample programs when you reload the seq/song file.

If there's no memory left when you try to auto-load a sample, you can now delete individual sample programs to make room for the ones you want. If you delete unused samples from a bank before you shut down, the auto-load feature will only load those samples in the bank that you kept. If you're tired of the whole two banks of samples in memory, you can wipe both banks out with a single button press, but only after responding affirmatively to a prompt, of course. Sample files edited and saved with previous software versions can be updated so they will auto-load.

A great new tool for the sequencer is the addition of a tempo track, available in song mode. Taking the place of the 24th track, the tempo track lets you record tempo change information from the data entry buttons or slider once you've chained your sequences together. If your sequences have different tempos, this track will either slow them all down or speed them up by a percentage of their original tempo. You can enter abrupt changes in tempo with a single event, or you can enter gradual accelerandos or deccelerandos with the data entry slider.

There are a few other miscellaneous niceties added with the new software, such as a "wake-up" mode selector by which you can have the TS boot up in any of six modes, including whatever software page you were on at power-down and General MIDI mode.

One thing no amount of software goodies can balance: This thing weighs a ton. Even the much smaller TS-10 weighs more than most other synths in the TS-12's league. It is possible to lift the TS-12 by yourself, but you'd be better off getting a handcart and buying a burly friend dinner to help move it. If *Keyboard* ever starts performing drop tests on synthesizers, perhaps the wisdom of the TS-12's construction will become apparent. Until then, yo heave ho.

Continued

ENSONIQ TS-12 SYNTHESIZER

VERSION 3: GENERAL MIDI. Other than some bug fixes, what the version 3 software adds over version 2 is full-blown 16-part General MIDI playback capability. In fact, that's all it adds. You can't edit the GM programs, change the GM effects, or even adjust the volume levels of GM instruments from the front panel. It will respond to MIDI controllers from an external sequencer, but it won't respond to GM enhancements such as Roland's GS-style controller data.

The TS's General MIDI mode is not integrated with the rest of the instrument. If you're in General MIDI mode, you can't use the sequencer, use any TS programs, or even access global system parameters. You can play one channel from the keyboard, and what you play will be transmitted out the MIDI out port, but the other 15 parts can be played only from an external sequencer.

The main reason for having a General MIDI sound module is to play back sequences that have been configured for GM, which are most often in Standard MIDI File (SMF) format. Even if the TS's sequencer could access its GM sounds, it still couldn't play back such sequences, due to Ensoniq's proprietary disk format, which doesn't allow for SMF transfers. According to Ensoniq, years ago they decided to forgo the standard DOS floppy format (in which most SMFs are transported between platforms today) and go with their own proprietary format, which allows greater storage capacity on a disk.

Compared to several other GM modules, the sound of the TS's GM mode lacks presence and power. Many acoustic sounds seem unrealistic, and the bass programs are weak. The drums in general and the cymbals in particular are not as convincing as those in other modules. But if we don't like it, TS, so to speak. No one is going to buy a TS-12 on the basis of its GM side; it's here strictly as a bonus.

CONCLUSIONS. With the new keyboard, is the TS-12 a major step above the TS-10? If playing on responsive, weighted keys is your bag, there's no question that it is. Does the new software significantly improve the instrument's performance and functionality? Not all that much. The new features are an enhancement of the operating system, not a redesign. If you're looking to upgrade your TS, though, it may give you features and bug fixes that you'll benefit from. A lot more could have been done to provide General MIDI functionality — but in a $3,000 weighted-action synth, GM is not a major selling point. Compatibility with the EPS/ASR sample library, which the TS has had all along, is more important. In all, it's a solid workstation. ■

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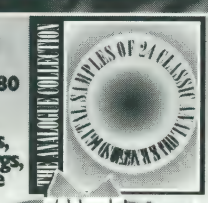

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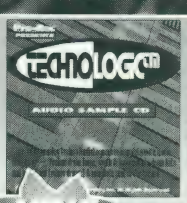

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Continued from page 70

to play CD-ROM games, I'd probably buy a Mac — but when possible, I prefer to use hardware that I already own, because it's embarrassing when the rent check bounces. The point of the Guest Editorial was that upgrading (as opposed to buying a shiny new integrated system) is not always simple, and that in the real world the menu may not include any perfect choices. I've heard horror stories from Macintosh users, too, by the way — init conflicts, fonts that disappear, and the always amusing task of trying to get three applications running at once under MultiFinder when one insists on OMS, another can't use OMS, and a third can't even use Apple MIDI Manager. My Windows MIDI drivers all seem to cohabit with unflappable serenity. (Until next week.)"]

Joey D. & Hammond

Joey De Francesco's comments regarding the Hammond-Suzuki organs [July '94] did little more than prove that artist product endorsements are an unreliable influence in making a buying decision. Joey D. should never have associated his name with a product that didn't meet his standards, and he sacrificed credibility by dogging that which he formerly recommended. Hammond-Suzuki should not have offered him an endorsement without properly qualifying his feelings or motives. It would seem that Hammond-Suzuki sought powerful advertising opportunities, while Joey D. was looking for a "free-B."

Greg McGuirk
Indianapolis, IN

Quadrasynth

Your review of the Alesis Quadrasynth [June '94] has me spitting mad. I spent seven hours playing a Quadrasynth when they first started to ship. I really wanted to like it. It *did* have 64-note polyphony and a lot of other cool features that made it sound great — on paper. But the actual instrument leaves a lot to be desired in the sound department. The strings are thin and airy, the brass sounds like something off a DX7, the drums lack punch and clarity, and the synth sounds have no life to speak of. However, the pair of ears that listened to it at *Keyboard* thought it "better than a Korg 01/W, but not quite as good as a Roland JV-30." Is this the same 01/W that won the synth piano blowout a few issues back? Is this the same 01/W that practically everyone who is anyone is playing? The 01/W rips up not only the Quadrasynth but the JV-30 as well. Is Korg getting ready to come out with an 01/W Plus so now you feel it's okay to pan the 01/W?

I realize that advertising is where you get most of your money from, but you have a duty to your readership that is more important than money. Magazines that forget this point are soon forgotten. I would recommend the Quadrasynth to any player just getting started in a band or doing a basement recording project on a budget. But to claim that this instrument is anything more than that is just plain silly.

Cliff Suttie
Novi, MI

Diminished Respect

For many years I've wondered what was the best way to comprehend and employ diminished chords. Then I discovered Doc's magnificent exposition [June '94]. In one day, with "Diminished Licks," my curiosity was satisfied.

Steve Knighton
Culpeper, VA

Rantin' on Rabin

Continued on page 115

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SEQUENCER/SOUND MODULE

By Greg Rule

DESCRIPTION
Sequencer/sound module

FEATURES
AWM sample playback tone generator. Built-in sequencer. Large graphic LCD with treble and bass clef view. 28-note polyphony. Eight-part multitimbral. Accompaniment styles include dance/funk, rock, R&B, jazz/swing, Latin, Caribbean, country, march/waltz, and new age. ABC (Auto Bass Chord) system. Recognizes and responds to chord changes played on a MIDI controller. Step or real-time recording. 24-ppq clock resolution.

MEMORY
40 preset pitched voices and one 58-instrument drum and percussion kit. Onboard sequencer can store up to 20 songs (6,400 events). Each song can hold one four-part auto-accompaniment track and four linear tracks. 50 pre-programmed accompaniment styles, each with six variations.

INTERFACING
Minijack stereo out (can also be used for headphones). MIDI in, out. Runs on six AA batteries or optional AC adapter.

RETAIL PRICE
$299.

DIMENSIONS
7-3/8" x 4-1/8" x 1-1/3", 13 oz.

CONTACT
Yamaha, 6600 Orangethorpe Ave., Buena Park, CA 90620. (714) 522-9011. Fax (714) 522-9832.

TEMPTING AS IT MAY BE, WE'RE NOT going to crack any jokes about the QY8's small size. We'll forgo cutesy clichés, such as "big things come in small packages." We'll draw no comparisons between it and a Nintendo GameBoy. And we'll make no references to MIDI studios that fit in our mouth. This time around we're playing it straight by the book. (We're saving our wise-guy material for an upcoming appearance at Comedy Traffic School.)

Yamaha's latest is the third micro-module to bear the QY prefix. Like its predecessors, the QY10 and QY20 (reviewed July '91 and Aug. '93, respectively), it features a sample-playback synth engine, a sequencer, and a slew of pre-programmed musical patterns. It can be used to create new songs from scratch, or as an auto-accompaniment synth with real-time chord-change capabilities (similar to Yamaha's own portable keyboards, which let you select and play accompaniment patterns, and change the chords on the fly). Ease of use is the name of the game here. All of the QY8's menu categories appear along the top of its LCD, and a graphic treble/bass grand staff is used for step-entering notes (see photo).

The QY10 has been discontinued, so a more relevant question is how the QY8 stacks up against the QY20. For starters, it sells for half the price of a QY20 and, as to be expected, has far fewer features and a more streamlined front panel. The QY8 is the first product in the QY line with no keyboard-type button layout, so the only way to record notes into its sequencer is from an external MIDI controller, or by entering them one at a time in step-record mode. The QY8's LCD is about the same size as the QY20's, but the layout is different. Gone are the QY20's mixer window and event-list editor, but in their place is a treble and bass clef view window, a measure display with a moving pointer, and a section devoted to menu and parameter items. What we miss the most when comparing the two units is the QY20's 96 ppq clock resolution; the QY8's resolution is 24 ppq, which is too coarse for anything except rigidly quantized rhythms.

SOUNDS. The QY8's ROM bank contains 40 pitched instruments, including acoustic and electric pianos, mallets, organs, acoustic and electric guitars, basses, strings, horns, synth leads and pads, and a handful of effects such as Bowed Bell, Crystal, and Sweep. It also has a 58-piece drum and percussion kit replete with stick and brush hits, acoustic, processed, and analog drums, cymbals, and a standard assortment of bongos, congas, maracas, timbales, and the like. None of the sounds are editable.

We brought in a few *Keyboard* staffers to assist in evaluating the sound quality of the QY8. The verdict? It isn't great, but then again it isn't bad considering its price. "The piano sounds okay when tucked into a tune," said one, "but the uneven split points and clock noise in the lower register are painful when it's soloed." A second listener concurred: "This is one of those pianos that I wouldn't want to play by itself, but it sounds okay in an arrangement."

Another item that jumped out was the similarities between certain patches. "There's not enough difference between Electric Piano 1 and 2," commented one staffer. "If they're going to give you two, they should be more different." We noticed the same similarities when comparing the marimba and xylophone, the two organs, the two strings, and the two synth pads. Not surprisingly, Yamaha is economizing by using some samples more than once.

Standouts: "Number 28, SyBrs, is the first patch I'd actually use in a tune," said one. "The synth strings are decent," reported another, "and although it doesn't sound anything like a flute, the flute isn't a bad sound." Most agreed that the drums and bass sounds had plenty of punch. Yamaha did a good job of picking the components, including such commonly overlooked items as brush hits, foot-closed hi-hat, and China cymbal.

Stinkers: The 12-string guitar. Said one staffer, succinctly, "Yuck." Another pointed out a limitation of the trumpet patch. "The problem," he explained, "is the 'blat' at the beginning of the sound; it's something you'd want only if you were playing loud." One final note: The QY8 is not a quiet machine. Not by a long shot. When we turn up the volume (with no notes playing), we hear a noise floor that resembles a strip of bacon frying in a skillet. In fairness to the little guy, though, when dense tracks are playing back, the noise and sample anomalies become far less apparent. Said one listener, "When you put these instruments into multi-track arrangements, it's surprising how much better they sound."

ANATOMY OF A SONG. There are three ways to record and manipulate songs with the QY8: linear "tape deck" style, pattern "drum machine" style, or a combination of the two methods.

For those who appreciate the simplicity of recording into a multi-track tape deck, the QY8 provides four linear sequencer tracks. Just set your initial tempo and time signature, choose which of the four tracks you want to record into, choose which of the voices you want to use, tell the QY8 if you want it to quantize (auto-correct) your part as you record it, hit the record button, listen for the two-bar count-off, and play. Unfortunately, there's no punch-in feature.

Step entry on the QY8 is a snap. Once you've selected the track you wish to step-edit, move the cursor to the appropriate location, grab a note, rest, or chord on the right side of the display, select its length (triplets included), and place it on the staff. As an option, notes can be step-entered from a MIDI keyboard. The owner's manual is very helpful in guiding you step-by-step through

Just add water and stir. With Yamaha's QY8, you can choose from a menu of pre-programmed musical patterns and assemble them into songs, or you can record your own tunes from scratch. It doesn't have a mini-keyboard like its older siblings, the QY10 and QY20, but it does have a decent lineup of sampled sounds and an inviting user interface.

PROS
Portable. Easy to use. Large LCD.

CONS
No voice editing. Coarse clock resolution. Tempo changes aren't programmable.

BOTTOM LINE
Fun and cheap, just don't expect too much from the little guy.

these procedures.

For quicker results, you may prefer to create or manipulate songs using Yamaha's auto-accompaniment patterns. As an alternative to recording your own tunes from scratch, the QY8 lets you choose from a menu of pre-programmed musical patterns. The pattern library houses 50 patterns ranging from dance to funk to rock to jazz. Each pattern consists of four tracks (drums, bass, chord 1, and chord 2) and has six variations (intro, A, B, fill 1, fill 2, and ending).

If you don't like the chords Yamaha provides, you can program new ones or change them temporarily as they play back. This feature is called ABC, short for Auto Bass Chord. Twelve roots and 25 chord types can be specified. Another feature, called On Bass, lets you specify a note different than the chord root to be played by the bass. The ABC feature can be controlled externally as well. Using a MIDI controller, you can specify a range of notes that the QY8 will respond to. As a pattern plays back, you can hit a chord on the controller, and the QY8 will alter the pattern in real time. Once you've entered an accompaniment, you can put your own linear tracks over the top if you'd like.

There isn't much in the way of advanced editing features on the QY8, but it does offer an Option menu that provides such utilities as erase, delete, create, and copy measure, mute, key change, mix parts, transpose, clear song, program change, and undo. The QY8 also allows key signatures, time signatures, and volume setting for each track to be specified in advance. The time signature options are 2/4, 3/4, 4/4, and 6/8, and can be changed throughout the song. Tempos, however, can't be changed (short of riding the master tempo control in real time).

MIDI. The QY8 is eight-part multitimbral. (Ignore the "16-part multitimbral" mention on page 77 of the owner's manual; it's a typo.) A chart in the back of the manual lists the program change number for each instrument. If, for example, you want to access the harmonica on MIDI channel 2, simply send program change 23 on that channel and you're ready to blow.

In general, the QY8's MIDI options are slim pickin's. It will transmit and receive program changes, sequencer start/stop/continue messages, MIDI clocks, velocity info, and pitch-bend messages, but it isn't aftertouch-compatible, and the only controller it recognizes is sustain (64). Thankfully it will send and receive sys-ex dumps, so once you max out the sequencer's memory (and believe us, you will), you can store your tunes offsite. A MIDI data filer will prove essential for those who use the QY8 for live performances, which of course doubles the cost of the hardware. A final caveat: There's no MIDI thru, and the QY8's MIDI output can't be configured to act as one. If you plan to use the QY8 in a MIDI chain, you'll have to make sure it's the caboose.

CONCLUSIONS. There are two ways of looking at the QY8. From a MIDI sophisticate's perspective, there's not much to write home about. Its sounds are average at best, they can't be edited, and the sequencer's clock resolution is a stiff 24 ppq. On the other hand, the QY8 is cheap, portable, easy to use, and . . . fun! No, we're not about to cut a record with it, but we'd gladly use it for a rough demo, or take it on the road for use as an idea machine. It's also an attractive tool for low-budget one-person bands and for those who want a user-friendly music-minus-one practice companion. ■

PHOTOGRAPHY: WARREN HUKILL

LETTERS

Continued from page 110

What came first — the piano or the guitar? In Trevor Rabin's case, it was the piano. Thank you for getting it straight that Trevor's guitar playing stemmed from his strong foundation on keyboards [June '94]. He applies keyboard thinking throughout his guitar playing; this is one of the main reasons his work stands out from that of other guitarists. I really appreciate you taking the time to bring this aspect of his work to light, especially on the heels of *Talk*. One correction: Trevor's dog is named Solly, not Sally.

Christine Holz
Music News Network
Tampa, FL

Lingua Franca Follies

[*The verbal fur still flies in the wake of our Mar. '94 excerpt from Mac Rebennack's autobiography. Mac's language is less than genteel, a fact that prompted reader Wallace R. Rust to threaten to let his subscription expire if we don't "raise [our] standards." "Music is a language and an art form," wrote Rust in our June '94 Letters column. "You should reject outright all profanity." More letters on the same subject ran in the July and Aug. '94 issues as well. This month, another reader takes issue with Rust.*]

I agree with Rust: Music is an art form as well as a language. What he fails to realize is that people will say whatever they want to, in any language. When a person's feelings and thoughts come out in a work of art, it may not always be pretty. It is sad that we, the artists, have to deal with the closed-minded pigs who want to dictate what is right or wrong. I would like to thank *Keyboard* for being true to our rights. Please accept my subscription to take the place of Rust's. I'm sorry he has such a problem with reality, but I guess he can read another fucking magazine.

Stefan Keel
Irvine, CA

Save the Clavinet!

In his Dec. '93 article about electromechanical keyboards of the '60s, Barry Carson reported that Hohner representative Don Williams was trying to find the molds for Clavinet hammer tips with the idea of resuming their production. These rubber hammers tend to become grooved and/or soft and sticky with age, which results in an annoying popping sound every time a string is released and makes the instrument essentially unusable.

Unfortunately, Don Williams is no longer employed at Hohner, and the effort to resume production of these parts has been abandoned. I recently expressed my frustration with this in a long letter to Hohner headquarters in Germany. To my mind, a manufacturer should take responsibility for providing replacements for unique and essential parts that wear out in the normal course of playing. By refusing to supply these parts, Hohner is turning its back on the people who helped the company prosper.

I received a short letter in response, stating that it was not in Hohner's financial interest to resume production of a part for which there is so little demand. But with the recent upswing in interest in older keyboards, combined with the fact that most existing Clavinets should be starting to experience trouble with their hammers about now, I think it might be possible to show Hohner that the market is bigger than they think. To that end, I encourage other Clavinet owners to write to Hohner Vertrieb GmbH., Postf. 1260, D-78636 Trossingen, Germany. Make the corporation listen to the musicians.

David A. Anderson
Los Angeles, CA

Continued on page 144

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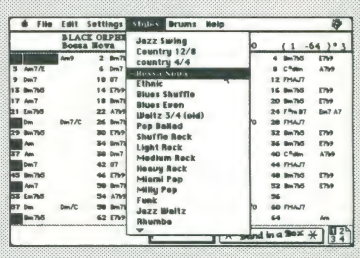

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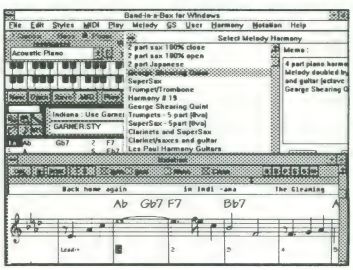

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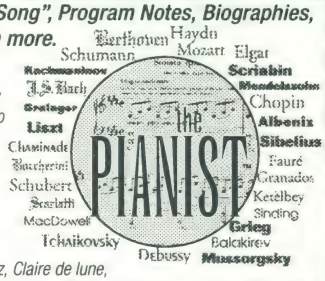

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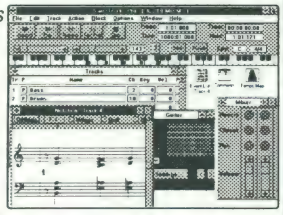

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SOUNDPROOFING

Continued from page 78

staggered stud walls with 2"x8" joists centered 16" apart, filled it with batt (standard fiberglass) insulation, and covered it with sheet rock hung on resilient channel. The top of the ceiling was finished with plywood for storage.

Doors and windows are probably the hardest elements to deal with when soundproofing, especially with home studios. The ideal door solution is a sound lock (a closet-sized room separating the rooms); you have to walk through the sound lock to get from one room to the next. Unfortunately, there usually isn't the budget or space to build a sound lock in most home studios.

Hagadone had two doors to contend with, the front entry door and the door to his storage space. He chose to hang two doors in each space, one opening in and one opening out. The doors were swung from opposite jambs to keep the knobs from interfering with each other.

"Putting two doors in a jamb can get you a little more isolation than a single door, but it's nowhere near as good as doing a foyer and another door," cautions Long. "You need a significant air space between the two doors before they start acting independently. You're better off buying a commercial sound-rated door that might have a 50 STC value, and have a good frame and seals. A sound-rated door will weigh ten to 14 pounds per square foot. Getting the STC you want is just a matter of mass. A standard solid-core door is about an STC 30, and if you put two of them together you might get an STC 40 out of them. Put them six feet apart, and you might get an STC 60. The distance makes a big difference."

Sealing a door when it's closed is an important consideration. Many heavy sound-rated doors have cam lift hinges (also known as rising butt hinges) that raise the door as it opens. This eliminates the need for a drop closure or flexible sweep that can go out of adjustment. Long says that for home studios, "if it doesn't pass air you're 90% there. The trick is that it may not pass air five minutes after you get it done, but over time these things wear out or go out of adjustment or get compressed. There's a lot of maintenance involved in these designs."

With no need for a separate control room, Hagadone chose to have no windows at all. There usually isn't room in the average home studio for a control room, either, so the main concern is sound transmitted through the existing windows. Windows, like any opening, have to be as consistent as possible with the rest of the partition. In an average wall, windows make up at least 10% of the surface area, which practically wipes out the sound abating ability of the wall. Storm windows, heavy drapery, shutters — any mass-increasing treatment will help reduce noise through a window somewhat. With a window, like any other transmitting surface, the main thing is mass. "You need heavy glass," says Long. "Laminate glass, 1/4"-inch minimum, an air space of at least two inches, and another heavy sheet of glass. With that combo you can get an STC of around 40. That's probably not as good as your wall, but it's better than nothing."

The answer for much of soundproofing is to make the room as tightly sealed as possible, and surround yourself with heavy partitions. The ideal soundproof room might just be an old bomb shelter, buried deep in the back yard, lined with a yard of concrete. It might be a bit isolated, but can you think of a better way to develop a studio tan that'll makes you the envy of all the MIDIots down at the music store. ■

Calix Lewis Reneau, first and foremost a musician, has logged 15 years in construction. Though he consults often on studio construction jobs of all sizes, he still has fun playing with his kids. He wants you to buy his album Politically Incorrect *with the band Resolution, on N' Soul records.*

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ULTIMATE KEYBOARD COMPETITION

Take the stage with the great ones!

In celebration of our 20th anniversary, we're expanding our annual Soundpage Contest into the Ultimate Keyboard Competition – your chance to prove what a great keyboardist YOU are *and* win one of the fabulous prize packages shown here. To enter, send us a tape of you playing the keyboard, along with an Official Entry Form. We'll select 12 winners according to their musical talents and abilities. The Grand Prize winner will receive musical equipment worth over $14,500 and be flown to the January 1995 NAMM show in Anaheim, California, where he or she will share the spotlight with the legendary players scheduled to perform at the *Keyboard* 20th Anniversary Concert. Enter today, and you could become a star – and win some great gear too! All entries must be received by **October 31, 1994.**

GRAND PRIZE Round-trip air fare and hotel accommodations for one to Anaheim, California in January 1995 to participate in the *Keyboard* 20th Anniversary Concert • Korg 01/W ProX • Roland JD-800 • Akai Digital DR4d hard disk recorder • Ramtek 1.2Gb hard drive • Digitech TSR-24 multi-effects processor • BBE 862 Sonic Maximizer • Aphex 105 Noise Gate • Choice of Steinberg/Jones Cubase (Mac, PC, or Atari), Mark of the Unicorn Digital Performer (Mac), Opcode Vision (Mac), or Twelve Tone Systems Cakewalk Professional for Windows (PC) • Choice of $500 worth of Stratus or RSI sounds from Sweetwater Sound, Invision Interactive's Stratus Library, or Ilio Entertainments' The Synclavier Library • Choice of Music Quest PC MIDI Interface or midiman Macman Interface

OFFICIAL RULES

ELIGIBILITY: The competition is open only to amateur and semi-professional musicians. Established professionals are not eligible. *Keyboard* will have sole discretion in determining eligibility.

You are not eligible if you have had an album released under your own name (or stage name) on a major label or a large independent label. (For our purposes, a "large independent label" is a record company that has five or more LPs, CDs, or tapes in its catalog, or LPs, CDs, or tapes by three or more different artists or groups. An "album" is a 12" 33-1/3 RPM vinyl disk or full-length CD or cassette. You will not be disqualified for 45 rpm or CD singles or 12" EPs, nor for up to four self-produced albums on your own private label.)

You are not eligible if you have been listed as a producer or co-producer of more than one album on a major or large independent label, or if you did most of your keyboard work as a regular member of a band whose album(s) have appeared on such a label.

You are not eligible if you have played on more than six nationally distributed commercial spots (radio or television) or films, or have been credited as a session player on more than six albums of any kind.

CONTENT: All selections must be either original compositions by you, or compositions that are in the public domain. All arrangements must be original unless your performance is of a classical work exactly as written. In the event that *Keyboard* releases a compilation CD or tape of contest winners, and if you win with material for which we are unable to secure the rights, an alternate entrant's piece will be featured on the compilation.

RIGHTS AND AGREEMENTS: By entering, you warrant that you meet all eligibility requirements specified here. You also agree that *Keyboard* and others licensed by *Keyboard* may use the composition and arrangement in a compilation tape or CD, and copy, sell, distribute, and/or broadcast the tape or CD, all without payment of any royalty to you. This agreement covers only this one-time use. If you are the writer/composer, you will retain copyright. A formal written agreement to this effect will be required of you if you win. Also, you must grant permission for *Keyboard* to circulate your recording to record companies and radio stations at our discretion.

HOW TO ENTER: Your entry should consist of a single piece of music, no longer than four minutes in length. Entries that exceed the maximum time will not be considered.

All entries must be submitted on standard audio cassette tapes (at 1-7/8 ips – no double-speed cassettes or DAT). A label with your name, address, and phone number must be firmly attached to the cassette itself, *not* to the little plastic box. Also on the cassette label itself, please indicate what type of tape it is (standard, CrO2, or metal), the total time of the selection, and whether you used Dolby C, Dolby B, or no noise reduction. Send the cassette "heads out," cued up, and ready to roll. Please don't put anything on the tape other than the selection you want us to consider for the competition.

SECOND PRIZE Oberheim OB-Mx • Roland SD-35 • Furman PL-Plus Rack Light Module • Choice of Steinberg/Jones Cubase (Mac, PC, or Atari), Mark of the Unicorn Digital Performer (Mac), Opcode Vision (Mac), or Twelve Tone Systems Cakewalk Professional for Windows (PC) • Choice of $500 worth of Status or RSI sounds from Sweetwater Sound, Invision Interactive's Stratus Library, or Ilio Entertainment's The Synclavier Library •Choice of Music Quest PC MIDI Interface or midiman Macman Interface

THIRD PRIZE Roland JV-880 • Oberheim Cyclone, Drummer & Strummer • Aphex 106 Compressor • Choice of Steinberg/Jones Cubase (Mac, PC, or Atari), Mark of the Unicorn Digital Performer (Mac), Opcode Vision (Mac), or Twelve Tone Systems Cakewalk Professional for Windows (PC) • Choice of Music Quest PC MIDI Interface or midiman Macman Interface

FOURTH PRIZE Roland AX-1 • Oberheim Matrix-1000 • BBE 362 Sonic Maximizer • Furman PM-8 Power Conditioner • Choice of Steinberg/Jones Cubase (Mac, PC, or Atari), Mark of the Unicorn Digital Performer (Mac), Opcode Vision (Mac), or Twelve Tone Systems Cakewalk Professional for Windows (PC) • Choice of Music Quest PC MIDI Interface or midiman Macman Interface

FIFTH THRU TWELFTH PRIZES

Choice of Steinberg/Jones Cubase (Mac, PC, or Atari), Mark of the Unicorn Digital Performer (Mac), Opcode Vision (Mac), or Twelve Tone Systems Cakewalk Professional for Windows (PC) • Choice of Music Quest PC Interface or midiman Macman Interface

All entries must be accompanied by the Official Entry Form, or a separate piece of paper that contains the following information: your name, address, and phone number, and the title of your selection. Plus, list the personnel heard on the tape, the equipment used (both instruments and recording gear), and the recording date and conditions (concert, home, pro studio, or whatever). Finally please list your major recording, performance, and music education credits. These credits won't affect our final decision, but they will help us put your work in perspective.

Each individual or musical group may submit only one entry.

SEND ENTRY TO: Ultimate Keyboard Competition, *Keyboard*, 411 Borel Avenue, Suite 100, San Mateo, CA 94402.

Please do not call our office to check on the status of your entry, and please do not ask for an individual evaluation. We will only notify the winners.

If your tape is selected as a winner, you may be expected to provide your master cassette, DAT, or reel. It will be returned. All other tapes and materials will not be returned.

DATES AND DEADLINES: Entries must be received by October 31, 1994. The winners will be notified by December 1, 1994. A list of winners will be available upon written request at the conclusion of the competition. Good luck!

KEYBOARD

Ultimate Keyboard Competition Official Entry Form

Name _____

Address _____

City _____ State _____ Zip _____

Phone _____

Equipment Used _____

Personnel _____

Recording Date _____

Where did you record? _____

List any recording, performing, and music education credits _____

_____

(Use additional paper if necessary)

Entries must be received by October 31, 1994. The winners will be notified by December 1, 1994.
Send your entry to: Ultimate Keyboard Competition, Keyboard, 411 Borel Avenue, Suite 100, San Mateo, CA 94402.

KEYBOARD REPORT

AQUILA MR2

WIRELESS MIDI SYSTEM

If you want to dance all over the stage while trading licks with your guitar player — without worrying about getting tangled in a long MIDI cable — what you need is Aquila Systems' MT2 transmitter (lower L) strapped to your belt and MIDIed to a strap-on keyboard controller like Roland's AX-1, along with the Aquila MR2 diversity receiver (top) connected to a rack of sound modules. For improved reception, you can obtain the optional antenna extension kit (shown here with the wireless system), which includes large antenna clips and six-foot cables. Otherwise, the antennas connect to the rear of the MR2 receiver.

HAVE YOU EVER BEEN FRUSTRATED BY being rooted behind a stack of keyboards while the lead singer and guitar player in your band are free to frolic around the stage? You do have a few options: Take up the accordion; hunt down a strap-on synth from the past, such as the Moog Liberation, Yamaha CS01, Roland SH-101, Casio CZ-101, or Korg 707; or buy a strap-on MIDI controller. Since Lync isn't in business anymore, the only current strap-ons we know of are Roland's AX-1 (see Keyboard Report, Jan. '94) and the Yamaha KX5. Kawai's new KC20 is being shown in their ads as a strap-on, but our information from Kawai is that it can't be run on batteries.

Even with a strap-on, you'll still be tethered to a central location by audio, MIDI, and/or power cables — unless you team up a battery-powered controller like the AX-1 with a wireless MIDI system. Versions of the latter have been around for eight years now, some with more success than others. The requirements for wireless MIDI transmission and reception are more demanding than those for wireless audio systems, because even brief dropouts can cause stuck notes, and that can ruin a show.

Now a new company, Aquila Systems, has ventured onto the MIDI wireless scene with an extremely reliable system that may be within financial reach of gigging players. We subjected their MR2 diversity wireless MIDI system to some grueling tests, and it passed with flying colors.

THE COMPONENTS. The standard MR2 system consists of the 4-1/2" x 2-5/8" x 1-1/2" MT2 transmitter, the half-rack MR2 diversity receiver, two 9" whip antennas, and an oversized wall-wart power supply for the MR2 receiver. Mounted on the underside of the MT2 transmitter is a flaccid 3-1/2" antenna. Powered by a 9-volt battery, the MT2 will reportedly run continuously for 1-1/2 to 2-1/2 hours on a rechargeable NiCad, four to five hours on an alkaline, and nine to 14 hours on a lithium. It has a power switch, an LED power indicator, and a channel selector mounted on top where you can see and access them when the MT2 is strapped to your belt. The unit's MIDI-in connector is also located on the top side, so that an attached MIDI cable protrudes upward where it might get in the way. It's too bad the MIDI in isn't located on the unit's side to avoid this potential problem. Also bothersome is the fact that the MT2's belt clip isn't tight enough to secure the unit to the keyboard strap, which players without belts might prefer. And while we're complaining, we might as well point out that while Roland ships the AX-1 with a long MIDI cable that has a mechanism that locks its plug into the AX-1's MIDI out, this cable is unwieldy when you only need a three-foot cable to run from the controller to the MT2; unfortunately, you can't buy a shorter MIDI cable that locks into the AX-1. So if you prefer to use a short MIDI cable to connect the two devices, you may want to use duct tape to reduce the chances of the MIDI cable becoming detached from the controller in the heat of performance.

Besides LEDs to indicate power status and MIDI reception, the MR2's front panel features two slanted stacks of 11 LEDs (ten red, one green) that show the strength of reception from the MT2, as well as a yellow "battery low" indicator. (The MT2's power LED also blinks when battery power dips below 6.8 volts; according to Aquila, you probably have 30 minutes to two hours of battery power left once this LED starts blinking, depending on the type of battery you use.) We'll describe the final front-panel LED, which is labeled "ANO," below.

Around to the back of the MR2, you'll find a pair of antenna terminals, a MIDI-out connector, and a radio channel selector. The MT2 and MR2 can be set to any of eight radio channels. Aquila recommends, however, that no more than four of their wireless MIDI systems be used at one time, and that the systems be set to all odd or all even channels in order to leave a channel open between them. Multiple channels are available should you encounter some kind of interference on one channel. The Aquila system transmits on frequencies between 902 and 928MHz, a range used by some computer wireless local area networks and cordless business telephones, but this frequency range isn't as crowded as the bands used by two-way radios and cellular telephones. The spread spectrum radio technology used by the Aquila and at least one previous wireless MIDI systems was originally developed for use by the military.

PROS
Accurate transmission and reception response of MIDI performance data in a variety of environments. Simple operation.

CONS
Transmitter clip is too loose-fitting.

BOTTOM LINE
A boon for any footloose, strap-on keyboard playing rocker.

MAIN FEATURES
Eight selectable radio channels. Up to four systems can be used at once. Two selectable MIDI error protection schemes. Low battery power indicators.

SUGGESTED RETAIL PRICES:
$1,499. Antenna extension kit: $59. 19" rack-mount kit: $37.

CONTACT:
Aquila Systems Inc., Box 572, Hatboro, PA 19040. (215) 957-5450 (phone and fax).

Also located on the MR2's rear panel are two switches, one for assisting in system setup, the other for selecting one of two MIDI error protection schemes (or neither). The former switch allows you to disable either of the MR2's antennas, so that you can position the opposing antenna for optimal reception. With the standard Aquila package, the antennas screw directly into the back of the receiver and can be rotated left or right and swung down to any angle. If you intend on installing the MR2 in a rack, or if you want to ensure optimal reception, you should invest in the optional antenna extension kit, which includes six-foot cables and antenna-mount clamps that are big enough to grasp objects up to two inches in diameter.

You can choose either of two types of MIDI error protection using the MR2's "ANO" switch. "ANO" refers to all notes off, and the error protection scheme you select will depend on the synth(s) you're driving with the Aquila system. The first type depends on active sensing, which is used by Roland synths among others: If the Aquila detects an inappropriate MIDI byte, it cuts off its normally transmitted stream of active sensing data, which will cause the receiving synth to shut down for a split second, then reset itself with no notes sounding. The second type will result in the MR2 transmitting note-off commands for every note on the last MIDI channel addressed. If your system includes some synths that respond to active sensing and others that don't, you'll probably want to use the second option.

TORTURE TESTS. *Keyboard* Central is located on the first floor of a modern six-story building. The walls are full of metal, so much that our radio-controlled car goes nuts and won't respond correctly beyond about ten feet. Anxious to see how the Aquila system would work in this environment, we strapped on the AX-1 that Roland kindly provided for this review, connected the MT2 to the AX-1 and the MR2 to a synth, turned the volume up, and took a stroll down the hall. We were able to cover the entire floor in our area without losing communication with the MR2, even when more than one wall intervened. Then we moved the show to our loading dock, strapped the AX-1 and MT2 onto a willing assistant, and sent him out across the parking lot. He got at least 100 yards away (almost out of sight) before his transmission started breaking up. In both cases, we mounted the antennas (complete with extension kit) wherever was convenient without taking the time to optimize their location.

What does this prove? That the Aquila system is very powerful and should provide you with plenty of room to roam. Granted, every stage situation will be different, and there may be other interfering variables — such as reflections from metal structures — to contend with, so do as the Aquila documentation recommends and try the system out before every performance. There may be some dead spots to deal with — even onstage — and you'll need to find out about them in order to avoid them.

Strap-on keyboard controllers aren't the only reason to consider a wireless MIDI system. It would also come in mighty handy in any situation where it would be inconvenient to run MIDI cables.

COMPETITION & PRECEDENTS. Unless you look on the used market, the only current competitor to the Aquila wireless MIDI system comes from Midiman. It's called the TransMidi ($499), and it really isn't an entire system; you need to combine it with a standard wireless guitar system. Nady used to sell a TransMidi-based system (see Keyboard Report, Oct. '90), but they no longer offer it. A TransMidi-based system won't be as expensive as the Aquila by about $600, but it also won't be quite as convenient — requiring two components each at the transmitting and receiving ends of the link.

Actually, Nady was the first company involved in wireless MIDI. We reviewed their $4,500 system back in Apr. '86. Since that time, there has been another system of note, the Gambatte MidiStar Pro (see Keyboard Report, Jan. '90). Like the Aquila MR2, the Gambatte system used spread spectrum transmission. While it was considerably cheaper than the original Nady wireless system, you had to pay almost $2,000 for a Gambatte. Unfortunately, the company is no longer doing business.

CONCLUSIONS. If you're tired of sitting or standing behind a bunch of keyboards, get mobile. Not just mobile, but wireless. It will cost you somewhat over $2,000 for a new controller and the Aquila wireless system, but it will be worth it if it gets the house rockin'.

—Mark Vail

E-MU PROTEUS FX

RACK-MOUNT SYNTH MODULE

E-MU MUST BE FOLLOWING IN APPLE'S footsteps. Just as a single Macintosh spawned a family bearing the name, the popular Proteus synth module has begotten an entire line. First, there was the Proteus/1 (see Keyboard Report, Aug. '89), which set new standards for a sample-playback synth module: a wide variety (4Mb) of really good sounding 16-bit samples, 32-note polyphony, full programmability, and three pairs of stereo outputs. Since a majority of the original Proteus sounds were pop-oriented (drums, guitars, basses, saxes, horns, etc.), E-mu chose to stuff the Proteus/2 (see Keyboard Report, May '91)

PROS

Collection of the best sounds from Proteus/1 and /2, with effects.

CONS

Effects aren't stored with patches. No dynamic filters. No auxiliary outputs.

BOTTOM LINE

In some ways better, in others not as good as the original Proteus.

MAIN FEATURES

8Mb of sample ROM from Proteus/1 Pop/Rock and Proteus/2 Orchestral. 256 ROM patches, 256 RAM patches, 32-voice polyphony, 16-channel multitimbral operation. Built-in effects with 24 algorithms. MIDI-Patch real-time modulation system. Four preset alternate tuning tables (Just C, Vallotti, 19-tone, and gamelan), one user-definable tuning table.

SUGGESTED RETAIL PRICE

$749.

CONTACT

E-mu Systems, Box 660015, Scotts Valley, CA 95067-0015. (408) 438-1921. Fax (408) 438-8612.

The newest addition to E-mu's Proteus line, the Proteus FX. Physically, the Proteus FX differs from its predecessors in that it isn't as deep. It comes with a wall-wart AC adapter instead of having an internal power supply like other E-mu rack-mount modules. It also lacks the auxiliary outputs of the original Proteus line.

PHOTO: WARREN HUKILL

with orchestral instruments. Then came Proteus/3 World, which provided samples of more esoteric — read Middle Eastern, African, non-Western — instrumentation. Somewhere in there, E-mu packaged some sounds from the first two Proteuses (Protei?) with built-in effects processing into the keyboard-based Proteus MPS (see Keyboard Report, Mar. '92).

Now E-mu has sequenced into the next phase of the Proteus family by releasing the Proteus FX. Like the MPS, the FX offers sounds from the /1 and /2 and has built-in effects. However, it maintains the original Proteus spirit by being a single-space rack module. It offers all the editing features of the original, so we'll refer you to the previous review for those details. Unfortunately, there are still no dynamic lowpass filters, nor any of the cool synthesis concepts E-mu developed for their Morpheus (reviewed Mar. '94). The big news is that the Proteus FX costs a substantial $250 less than the original Proteus. While it gives you considerably more in some areas, it comes without a couple of features present on the original that are important to some people.

Like earlier Proteus modules, the FX has front-panel buttons for navigating the synth's logical menu system. There's also a cursor-back button, which is more convenient than holding the cursor button and turning the data-entry knob to cursor backward on the original Proteus. More importantly, there's a headphone jack on the new model. The backlit LCDs on both units contain the same number of characters (16 x 2); the LCD on our FX review unit occasionally got the heebie-jeebies, its brightness fluctuating as if it were burning out.

More differences: First, the FX model isn't as deep. The original Proteus was 8-1/2 inches deep, but the FX only stretches back six inches. Second, the unit comes with a wall-wart power supply — the first time for an E-mu rack-mount synth. Does this mean E-mu intends the FX for consumers instead of pros? A glance at the FX's rear panel substantiates this assumption: Instead three pairs of stereo outputs, the Proteus FX has only the main left and right outputs.

Memory is more abundant on the Proteus FX than on the original Proteus/1. The FX has twice the sample ROM, 8Mb rather than 4Mb. Whereas the original Proteus offered 128 ROM and 64 user patches, the FX has 256 of each. Its total memory of 512 patches is grouped into four banks for display on the LCD: A small numeral appears in the fourth segment in the bottom row designating the patch's source as bank 1, 2, 3, or 4. The FX will respond to MIDI bank-select messages, making it much easier to navigate through all those patches. In addition, as with other Protei, incoming program changes can be mapped to select any patch in memory.

Identifying the type of sound associated with a Proteus FX patch is somewhat simplified by the inclusion of a prefix in the factory patches. For example, GrandPno and 7ft-Grand are labeled "kbd," Marimba and Javanese are "prc," VintgeB3 and Tarkus are "org," SoloMini is a "led" (lead synth sound), and Koto and Balinese are "eth." There are also "gtr," "bas," "drm," "str," "ens," "red" (reed), "syn," and "sfx" patches. While it doesn't conform to the General MIDI standard of patch organization, the FX's 512 sounds are arranged in easy-to-find groups.

What about the differences in sound between the old and new Proteus models? The FX's output seems cleaner and a bit hotter than our Proteus/1. Some patches — including several of the Hammond B-3 simulations and bass sounds — distort on chords at maximum volume. At least nearly all the patches play at an equivalent volume level, so there aren't some sounds that you can't hear and others that fry your ears and speakers simultaneously.

Since the Proteus FX responds to both monophonic and polyphonic pressure data, we're disappointed that more patches don't make use of these controllers. For instance, going back to the B-3 sounds, we like to bring in modulation using mono pressure. You can enable mono aftertouch yourself, but it's a shame it wasn't set up already.

Although poly aftertouch isn't programmed into many of the patches — we would have liked to see it enabled on all the violin and string patches, and especially on the one

called "Xpresive" — we're happy to see the FX offer the option. The patches that do respond to poly aftertouch demonstrate the possibilities. For example, OBString and Trombone allow you to make individual notes in a sustained chord speak louder and have more vibrato, respectively, than the rest. Even in those patches, however, we wish the response was more dramatic.

As on the Proteus MPS, the Proteus FX has two programmable effects processors, one of which does reverb, delay, echo, cross-delay (one echo at the opposite position in the stereo field), chorus, phaser, and flanging effects. The second also does delay, cross-delay, phaser, chorus, and flanging (the latter two in stereo), as well as two levels of distortion ("fuzz" and "fuzz lite") and a ring modulator.

Don't expect too much depth in programming the Proteus FX's effects. There are 11 types of reverb to choose from, but you only get to adjust the decay time for each one. In the echo algorithm, you get to set the feedback level (0-100), left and right delay times (0-255), and high-frequency damping (0-10). Any changes that you make to one of the effects stays active, whether you save it or not. That isn't conducive to experimentation if you're worried about getting an effect back to sounding exactly the way it previously did. When you change from one effect type to another, you'll lose any settings that you had set up, because all parameters revert to default values.

Worst of all, the effects are global rather than being stored with each patch! Welcome to the land of guitar-stomp-box programmability. The only way to store an effect is to save its parameters as system-exclusive data in a MIDI sequencer. Few musicians have the time or desire to wrestle with such a stone-age implementation.

In order to hear the effects at work, you have to assign the sound on each MIDI channel to the appropriate output bus. You can set each channel to bypass the effects entirely, access either effect 1 or 2, or go according to the setting saved with the current patch.

E-mu tells us they have five Proteus FX patch disks ready for you to load new sounds. These are available for the Macintosh, IBM-PC, and Alesis Data Disk for $29.95 per disk. The categories covered are Fresh Mix/Textures, Fusion/Pro Power, General MIDI, Synth FX, and Orchestral. Contact E-mu or your local dealer for more information.

The Proteus FX strikes us as a perfectly suitable do-it-all-in-one-box/ready-to-be-sequenced machine for the neophyte and midrange MIDI composer. In terms of sound quality and ease of programmability, it compares quite favorably with some of the older General MIDI modules out there, such as the Korg 03R/W, Roland SC-55, and Yamaha TG100, all reviewed in Mar. '93. Newer GM modules like the Korg 05R/W and Yamaha TG300, both reviewed in July '94 and both in the FX's price ballpark, will prove stiffer competition. If you're going to work in General MIDI land, maybe one of those would be better than the non-GM Proteus FX. On the other hand, if you want that great Proteus sound, it's here ready and waiting. —*Mark Vail*

FREE PLAY WORLD MUSIC MENU

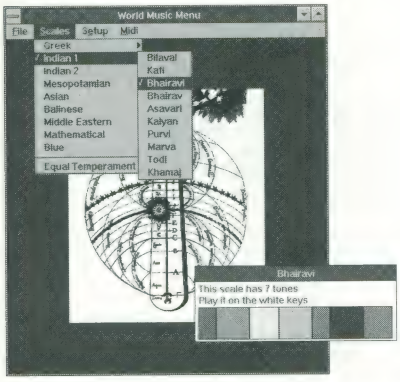
SYNTH TUNING UTILITY (WINDOWS, MACINTOSH)

OKAY, GROUP, I'D LIKE EVERYBODY to please raise your hand if you've ever used the tuning tables on your synthesizer. Don't be shy, let's see those hands. . . . Oh, come on. *Somebody* must be using their tuning tables!

Truth be told, most Euro-American styles of pop music don't require nonstandard tunings. The result: Synth manufacturers either don't provide tuning tables at all, or they provide only limited forms of tuning and tuck them away where they're hard to use. Which starts a negative feedback cycle. If a feature is half-crippled, how likely are musicians to delve into it? It's a sad state of affairs, because some of the most expressive resources in music arise out of unexpected intervals and scales.

Stephen Nachmanovitch to the rescue. His World Music Menu makes it easier than ever

WORLD MUSIC MENU



Pull down a fistful of exotic ethnic tunings with World Music Menu for the IBM-PC.

before to discover what alternate tunings sound like. With World Music Menu, dozens of scales from around the world are virtually a point-and-click away. No need to translate ratios into logarithms with a pocket calculator; just tell the software what synthesizer(s) you have, choose a scale, and the correct tuning will be transmitted over MIDI as sys-ex data.

To hear the tunings at their best, we chose a straight classical guitar patch with no layering, vibrato, or chorus. Two hours later, we were spotted sitting cross-legged on a blanket near the Kasbah. . . . Kidding aside, these exotic scales invite you to play in dimly remembered, highly ornamented melodic styles. Once you find a scale that pleases you, you can play intervals (or three-note chords, if you dare) to discover the wonderful nuances hidden within the pitch relationships. Sour, sweet, brash, enigmatic, subtle — it's a whole new world.

New to the concept of alternate tunings? Maybe we should explain that tuning tables are not simply ways to reshuffle the existing 12 notes of the equal-tempered scale. Instead, they allow you to play notes that are "in the cracks." The standard equal-tempered scale is actually a compromise tuning in which the "pure" intervals in the overtone series are twisted out of shape in order to allow music to be played in any key. That's why it's called equal temperament. When the intervals are tuned in pure mathematical relationships, some keys and scales sound quite good, while others sound harsh and dissonant. Most non-Western music doesn't use key or chord changes, so the fact that you can't modulate to a new key is not a problem.

SCALES & TUNINGS. The tunings in the program are grouped into nine categories — Greek, Indian 1, Indian 2, Mesopotamian, Asian, Balinese, Middle Eastern, Mathematical, and Blue. Each category contains from seven to 15 different tunings. For example, the Indian 1 list comprises the Bilaval, Kafi, Bhairavi, Bhairav, Asavari, Kalyan, Purvi, Marva, Todi, and Khamaj scales.

Don't know what those sound like? Go buy a Ravi Shankar record. Some of the scales are quite close to the too-familiar *do-re-mi*, but with a few notes just slightly off-kilter. Others contain intervals that are just slightly larger than a unison, or (in a few cases) intervals larger than a conventional minor third.

With a few exceptions, everything in World Music Menu is either a five-note or seven-note scale. The former are laid out across the black keys, while the latter obviously occupy the white keys. The keys not used by a given scale are all tuned to the tonic note (which will be *C* unless you set a transposition), which makes it very easy to play drones, but deprives the user of what might be characteristic or musically felicitous "accidental" inflections.

All of the tunings are given in the documentation as whole-number ratios. How close your synth can get to these mathematical values is another question. The Yamaha TX81Z has a fairly coarse tuning resolution, while the Kurzweil K2000 gets down to 1-cent resolution. Because the ratios are pure, many of the scales contain perfect triads. Others don't even have a good fifth between the *C* and the *G*.

We hope a future version of the program will include some tunings of more than 12 notes per octave. Wendy Carlos, Harry Partch, and other composers have done valuable work in this area. We'd also like to see a tuning table editor added to the program. At present, World Music Menu only knows about preset tunings. We'd like to be able to edit its tunings, and create our own. Yes, you can do that from the front panel of your synth — but then your tunings won't be stored in the same bank with World Music Menu's tunings. One of the big advantages of this program is that you can switch among a lot of tunings rapidly, even on a synth that has only one or two user tuning tables. If you need to bring your own tunings into the mix, that's no longer possible. (We're told that a companion program will be made available before long on which you'll be able to create new tunings in the World Music Menu format.)

Ergonomically, it would be easier to access the tunings if they were laid out in the main program window itself, rather than being selected from pop-out menus beside the main menus. The window itself is actually empty, except for a decorative graphic.

We quickly noticed that playing unusual tunings on a fixed black-and-white keyboard is a bummer. We kept reaching for the pitch-bend wheel to inflect a line by gliding from one interval to another . . . and at this point we hit a grossly huge stumbling block in synthesizer design: Even a synth that has good tuning tables still thinks of its pitch-bend range as being measured in equal-tempered half-steps! Oh, uncoolness. Oh, puke and a half. Why doesn't *any* manufacturer let you set the bend range as a number of keys in the current tuning rather than as an equal-tempered interval?

Hmm. Maybe the next version of World Music Menu could include a real-time pitch-bend processor. It would have to look at which note you're playing, calculate the distance to the next higher or lower note, and compress the pitch-bend data in a variable way, depending on whether you're bending up or down. . . . Sigh. That's the trouble with really cool software. You start to think of all the weird and wacky things you'd like it to do.

TRANSPOSITION & MODULATION. There's nothing sacred about Middle *C*. So it makes sense that World Music Menu allows you to shift any given tuning to whatever tonic you'd prefer. This is done simply by hitting a number key on the top row of the computer keyboard. The program provides two ways of

PROS
Dozens of exotic tuning scales instantly available. Compatible with many synthesizers.

CONS
No user-programmable tunings.

BOTTOM LINE
From Marrakech to Kuala Lumpur, and not a hair out of place.

MAIN FEATURES
Selectable non-equal-tempered tunings transmitted automatically via MIDI system-exclusive data. Compatible with selected E-mu, Kurzweil, and Yamaha synths. Instant modulation and transposition. Chaining of preset scales.

REQUIREMENTS
IBM-PC or equivalent running Windows 3.1, Windows-supported MIDI interface; or Macintosh (512k, system 6.0.x or 7) and MIDI interface; compatible synthesizer.

SUGGESTED RETAIL PRICE
$99.

CONTACT
Free Play Productions, Box 265, Pacific Palisades, CA 90272. (310) 459-8614. Fax: (310) 459-8801.

changing the tonal center as it's assigned to the keys: You can transpose, which shifts the pitch of the tonic while keeping the keyboard layout fixed; or you can modulate, which changes the pitch of the drone notes in exactly the same way but shifts the assignment of the scale to the keyboard.

The difference between the two is easier to hear than it is to explain. Let's say you're playing a seven-tone (white-key) scale, and you decide to modulate up by three steps. The pitch assigned to the *E* key will not change, because *E* (key 3) is the center around which the modulation pivots. However, the *E* pitch, whatever it is, will now be the tonic of the scale, which means that if you play from *E* to *E* you'll hear the intervals of the scale in their original form. The other white keys may be drastically higher or lower in pitch than before. Conversely, if you choose to transpose rather than modulate, the pitch that was formerly sounded by the *E* key will now be sounded by the *C* key, so that the scale in its original form will still be found when you play the keys from *C* to *C*.

SELECTION CHAINING. World Music Menu includes a feature called "stacking," with which you can create a list of up to 24 tunings. You can then step through this list, either with the computer's page up/down keys or with a user-definable MIDI trigger event (such as a footpedal).

While useful for quick changes during improvisation, this feature isn't implemented as well as it could be. For starters, there's no way to rearrange the contents of the stack. The only way to make a change is to delete the whole stack and start over. Also, the stack doesn't contain any information on the transposition of the scale, only the name of the scale itself.

COMPATIBILITY. When you set up World Music Menu, you begin by telling it what synths you have, and what MIDI channel and/or sys-ex ID number each is set to. Before selecting a new tuning, you can, if you like, choose which combination of synths the tuning will be transmitted to.

World Music Menu can talk to many of the current synthesizers that provide sufficiently powerful tuning tables, including the E-mu Proteus series, the Turtle Beach Multisound card (which is more or less a Proteus), the Kurzweil 150 and K2000, and the Yamaha SY/TG77, SY99, DX7II, TX802, TX81Z, and VL1. Support for other synths will become available in the future. Korg synths are not supported, because their tuning tables allow a maximum of a half-step of deviation for each key, which is not enough to accurately reproduce a number of the scales stored in World Music Menu. We think it's a shame that some sort of halfway compatibility with Korg instruments wasn't added to the program. Even if half of the scales generated an error message rather than being transmitted to the Korg, the musical palette would still be significantly enhanced.

In case you're wondering why your synth isn't in the list above, Nachmanovitch tells us that providing tuning compatibility is sometimes a lot more complicated than simply typing some code into a computer. He's had to deal with a number of obscure problems in the sys-ex implementations of various instruments, even some whose front panels provide excellent tuning capabilities.

We tested the Windows version of World Music Menu. The Macintosh version was not yet released when we went to press, but we're told it was in the final stages of beta testing, and should be available by the time you read this.

CONCLUSIONS. Experiencing the world of alternate tunings has never been easier. We're not knowledgeable enough ethnomusicologists to judge how authentic the scales in this program are, but they're sure fun to play. Now if only we could get all synth manufacturers to include really good tuning tables, let them be addressed straightforwardly with sys-ex messages, and also (hint, hint) tie the pitch-bend depth control into the tables, we'd be jammin' with Pythagoras. —*Jim Aikin*

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STEINBERG RECYCLE

RHYTHM LOOP EDITING SOFTWARE (MACINTOSH)

By Jim Aikin

LOVE 'EM OR HATE 'EM, SAMPLED rhythm loops are hot stuff. Pop music has always been about finding the perfect hook and then repeating it until the cows come home — nothing new about that, we're just doing it with new tools. Loops offer some other advantages besides making repetition easy: They allow songwriters and sound designers who have never met to collaborate on a project by means of a little bit of technological wizardry and a simple cash transaction. A sampled loop can include all sorts of expressive sound sources that the average person doesn't have access to. And they can be a source of inspiration for folks who are are still learning the complex skills of arranging and mixing. (That covers just about all of us, doesn't it?)

The biggest limitation of sampled loops, of course, is that they're pretty much set in stone. If the tempo or the feel is wrong for a given song, the songwriter or producer faces an unappetizing menu of choices — change the song, find a new loop, tune the loop to a new pitch, or try to time-stretch the sample to fit. Time-stretching DSP algorithms are getting better, but they still produce sonic artifacts, and even after a loop is time-stretched, it's still set in stone. It triggers from the start and plays straight through, the same every time — great if what you want is obsessive repetition, but not so great if you'd like to throw listeners a few curves.

If you're familiar with this scenario, you'll understand how useful a program like ReCycle can be. With ReCycle, a rhythm loop is no longer a fixed entity. Not only can you speed the loop up or slow it down, you can change the feel by editing the timing of certain drum hits. You can edit out some of the sounds entirely and replace them with others, retune the snare without affecting the pitch of the kick, pan one drum within a loop to a separate audio output for some special processing, add stuttering effects, juggle the order of the notes, or take a smooth-feeling groove and quantize it rigidly so that it does the robot stomp.

But that's not all. You can derive a groove from a sample and then apply it to whatever you'd like, even if you don't own a sampler. This program makes it practical for the first time to quantize MIDI to audio or vice-versa — or to quantize one chunk of audio to the events in another chunk.

Performing this magic is a snap, which is exactly the point. ReCycle doesn't actually do anything that you couldn't do yourself with

PROS

Automatic, effortless dissection of audio material into rhythmic segments. Automatically creates sampler programs and MIDI Files.

CONS

Not yet compatible with several important samplers. No stereo file handling. Difficult to position hand-inserted slice points accurately.

BOTTOM LINE

Stylin' those loops just got a whole lot easier.

STEINBERG RECYCLE

DESCRIPTION

Sampled rhythm loop editing utility.

HARDWARE/ SOFTWARE REQUIREMENTS

Any 68020 or better Macintosh, System 7 or higher. Digidesign SampleCell or Akai 3000-series sampler, sequencer capable of reading type 1 Standard MIDI Files.

FEATURES

Creates sampler programs and MIDI Files based on automatic analysis of rhythm loop. Adjustable beat-finding threshold. Manual insertion of slice points. Automatic tempo calculation based on time signature setting and loop length. Gain normalization. Automatic extension (stretching) of sample slices based on existing audio material. Packaged with free Polestar Magnetics audio sampling CD.

COPY PROTECTION

Two hard disk authorizations, one on purchase and one on returning registration card. Hard disk can be defragmented without damaging authorization.

SUGGESTED RETAIL PRICE

$199.

CONTACT

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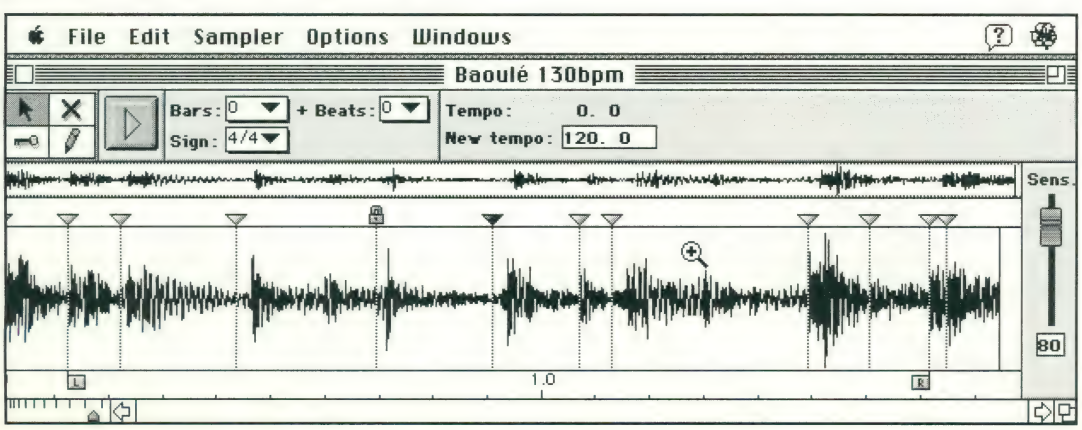


One size fits all: Steinberg ReCycle slices and dices sampled grooves to play at any tempo.

your sampler's and sequencer's editing commands, but it does in five minutes what would otherwise take an hour or more — and it does it perfectly, with no guesswork. The process is limited in several ways, so probably we shouldn't call it magic, but it's definitely snazzy. We need to make one limitation explicit, for the benefit of those who are new to this type of technology: ReCycle operates strictly in the time domain, not in the frequency domain, so it can't split apart events that occur simultaneously. Thus, to use the example mentioned above, you can retune the snare drum without affecting the kick *only* if the two never fall on the same beat.

Our review was written using a last-minute beta-test version of ReCycle — not our normal policy, but we wanted to let musicians know about this unusual product as quickly as possible. Long before you read this, ReCycle should be shipping, but we can't provide information about any bugs that may remain in the shipping version. All we can tell you is that the beta version was real solid except for a couple of obvious details that were not yet cleared up.

OVERVIEW. ReCycle performs, in an integrated fashion, four basic tasks. First it loads a sample file, either from the Macintosh hard disk or over SCSI from your sampler. Presumably, this file contains the audio that you want to loop. Second, it looks for peaks in the audio waveform and makes some educated guesses about where the beats are in the loop. It doesn't require a huge sharp peak to find a beat, only a place where the amplitude rises noticeably. (In fact, we're told that the analysis algorithm doesn't just find peaks; it's more sophisticated than that.) If you don't like the program's guesses, you're free to edit the beat markers, adding new ones of your own and hiding some or all of the existing ones.

Third, it splits the wave file into a number of separate chunks based on the positions of the markers (also known as "slice points"), and transmits these chunks to your sampler as separate samples. Along with the individual samples, it creates and transmits a program (keymap, envelopes, etc.) for the sampler that assigns these samples to the keyboard. Finally, it creates a Standard MIDI File that, when loaded into any sequencer, will send note-ons to the sampler in such a way as to trigger the individual samples in order. When this MIDI File plays back, the sound coming out of the sampler should be virtually identical to the original loop, even though the sound is now coming from a number of separate "time slices."

As Sherlock Holmes said, the process appears childishly simple once the logical steps are explained.

The one baffling limitation of the program is that it works only with mono soundfiles. Considering how likely musicians are to want to use stereo loops, this is a major bummer. Steinberg tells us they're working on adding stereo support, but they had no information on when it might become available. Another significant flaw is that currently only two sampler families are supported — Digidesign SampleCell I and II, and the Akai 3000 series (S2800, S3000, S3200, and CD3000). This is a little like building a screwdriver that only works on brass screws, not steel or other alloys. We sure hope Steinberg dives in and supports all of the usual suspects. Because of the nature of ReCycle, just supporting Akai sample files won't do the trick, even though they can be read by other samplers. Full support of program parameters is virtually a necessity.

If you've got the right sampler, you'll be cooking with gas in no time. We installed ReCycle on a Centris 650 with SampleCell II, a Digidesign Audiomedia II card, and Steinberg's Cubase sequencer. Running all three concurrently, we sucked a few loops off of OSC's *Poke in the Ear with a Sharp Stick II* CD and tormented them unmercifully. In the absence of a Sound Manager 3.0 compatible sound card, ReCycle will play back its files with eight-bit resolution through the Mac's internal speaker, which is good enough — just barely — to hear what you're doing. We're told that if your Mac handles 16-bit audio, ReCycle will support it. (Also, speaking of compatibility, a Windows version is in the works.)

OPERATING RECYCLE. The program opens up a single window, in which the loop waveform is displayed. Zooming in or out on this waveform is a total breeze: Drag on a little control in the lower left corner, and the waveform "telescopes" in real time. To fill the window with the region of your choice, command-drag across it. To move the region, drag on the dotted rectangle in the waveform overview strip.

At the right side of the window is ReCycle's main control slider. Labelled "sensitivity," this slider determines how closely the program will look for peaks in order to slice the loop up into shorter regions. With lower sensitivity settings, a loop may be sliced into only two or three large regions. As you move the slider up, more slice markers will appear, until dozens are visible.

Obviously, there's a playback button for listening to the whole loop. In addition, once the loop has been sliced up you can click on any segment to hear it play once by itself. This makes it quick and painless to tell whether the program has found the correct beats. Depending on whether the loop is made up of well-separated drum hits or a more or less continuous roar of sound, ReCycle may split some single beats apart, or leave some adjacent groups of beats glued together. With a live ensemble, some of the percussion hits may be a bit before the metrical beat, and these may be read as false "beats."

For best results, the manual recommends setting the sensitivity a bit higher than necessary and then using the Hide tool to eliminate the excess slice points within a given beat. "Hidden" slice points are still visible; they appear as small triangles above the waveform, while unhidden points are larger triangles. A hidden point can be unhidden with the same tool. Points can be grouped and hidden as a group, which is handy.

With a Pencil tool, you can insert new slice points wherever you'd like. Individual slice points can also be locked; this allows you to set the sensitivity quite high in order to find the points you need, lock them, and then drop the sensitivity back down to clean up the screen.

Slice points are never actually deleted, which seems a bit odd but may make sense: Since most of the points are located by the software, not by the user, what would happen if you deleted one and then raised the sensitivity setting? Should the same point be located a second time, or not? "Deleting" or "not deleting" is irrelevant with respect to the points found by the program, since these points are located instantaneously. More to the point, the points you insert yourself aren't deleted either, so they'll clutter up the screen every time you raise the slider.

A related peculiarity: ReCycle has no command for saving its own files. There's nothing in a file except a collection of slice points, so maybe there's no need to save it . . . but let's say you've customized an audio segment by adding a lot of your own slice points, and saved the results in SampleCell format. If you should later want to substitute a different sampler for SampleCell, you'll have to construct a program for that sampler yourself, and then transmit the audio files to it one at a time, because there's no way to recover your original work in ReCycle. Another scenario in which saving a file would be helpful: If you could create a set of slice points for the left half of a stereo file, save the points, and then load them and impose them on the right half of the file, you'd have a quick workaround for stereo file handling. ReCycle won't perform this trick.

We noted one problem with the Pencil

tool: There is no command for auditioning a slice of audio starting at the current position of the pencil. As a result, you have no way of knowing whether or not the pencil is at the right spot to insert a new slice point. In order to find out, you have to actually insert the point and then click on the segment following the point to audition it. If you didn't position the point correctly, you can hide it, but you can't delete it, so a file could conceivably get quite cluttered with useless user-inserted slice points. Also, it would be useful with some types of material to be able to slide slice points (either our own or those located by the software) forward or backward manually. This is not possible; all you can do is insert a new point and then hide the existing one.

Well, what the heck. This is version 1.0. It takes care of business just fine, though not always as elegantly or thoroughly as you might prefer.

STRE-E-E-ETCH. As handy as it is to be able to slow down a sampled loop by adjusting the tempo of a sequence, you may be wondering what happens to the audio in this situation. Won't the slices between segments become yawning empty gaps? Won't any continuous background ambience in the loop get chopped up by a digital chainsaw?

ReCycle has a procedure for reducing the impact of this problem — or eliminating it entirely if the slowdown is only a few bpm. First, you select an amount by which you expect to stretch the tempo; this amount can be adjusted between 5% and 100% in 5% or 10% increments. The stretch amount is then used to actually lengthen the sample slices: Each slice starts at the selected point (which corresponds to the beat), but its tail is extended.

We naïvely expected that this would be done by grabbing the audio at the start of the following slice, which would be *trés* undesirable, because it would create flams on the beats. Fortunately, we were dead wrong. Slices are not stretched by overlapping the following slices. Instead, new audio material is derived by copying part of the decay portion of each slice (where, presumably, there is little going on that's of any rhythmic interest) and playing it backwards. It's backwards for the same reason a back-and-forth loop is usually used — to minimize the audibility of the transition from the original material into the added, backwards audio. The backwards audio fades out smoothly to silence, so even if there isn't enough smooth decay to fill the gap, you won't hear a sudden chopped-off effect. How well this process works depends, naturally, on the audio source material.

If you're speeding up a loop, the note-offs in the MIDI file will prevent overlap by truncating the slices on playback, so there's no need for ReCycle to shorten the slices in the audio domain. If you only plan to shift one slice (a snare hit, for example) forward or backward to change the feel of the loop, you'll need to use the stretch command to avoid creating a gap — and the command is global, so a small amount of sampler memory will go to waste because all of the other slices will also have stretch material tacked onto the end. This is not a big deal, however.

TOOLS TO MAKE LIFE EASIER. Several other utilities are worth mentioning. For starters, you can set the start and end points of the loop to trim off unwanted material. If you've already created some slice points, the loop markers will "snap" to these, which will usually make it easier to get a loop that's a whole number of beats long.

ReCycle can normalize the gain of the slices before transmitting them to the sampler,

which could be useful (at least if you're starting with clean source material) for getting the best signal-to-noise ratio from your sampler. On the other hand, normalizing will usually destroy the dynamic relationships among the slices in the loop, because softer hits will get louder. It might be interesting if the next version of the program attempted to compensate for this by giving reduced velocities to the MIDI notes whose samples have been normalized. At present, ReCycle's MIDI Files contain only velocities of 127.

If you know that you want to substitute another sound for one of the sounds in the loop, you can instruct ReCycle to create a "silent" slice. At this point there's a fork in the path. You can transmit the whole loop to the sampler as a single file, or transmit it normally with each slice in a separate file. In the former case, the selected portions of the loop are indeed silenced, allowing you to substitute a new sound. The loop will still be at its original tempo, but it will have gaps.

In the latter case, where the slices are separate entities, it seems to us that the feature is implemented backwards. What we would expect would be that the note that would ordinarily trigger the silent slice would still be present in the MIDI File, but that the sampler's keygroup would be assigned no sample for that key. This would allow you to map whatever sample you'd like (a new snare, for example) to the appropriate key in the sampler, using a keygroup that was already laid out for you in the sampler's program, and also to retain the timing of the event. What ReCycle actually does, however, is send the slice to the sampler as usual, while deleting the corresponding MIDI note from the MIDI File. This scheme gives you the worst of both worlds: The unwanted slice is occupying sample memory, but the timing of the event is no longer available in the MIDI File. The slice has become silent only because it is no longer being triggered by the MIDI File. As a workaround, what you have to do is ignore the "silent slice" feature and delete the unneeded audio material after ReCycle transmits it to the sampler.

If you'd prefer to change some of the settings on the program that ReCycle sends to your sampler, you can load a new default program into ReCycle as a template. The program also includes a "new tempo to pitch" command. This adds a tuning offset to the program transmitted to the sampler. Combine this with the tempo setting that's embedded in the MIDI File, and you get much the same effect you'd get if you sped up or slowed down the loop the old-fashioned way, by tuning it up or down.

CONCLUSIONS. If you use sampled rhythm loops, and if you own a Macintosh and one of the supported samplers, you will absolutely *love* ReCycle. No kidding. It's quick, it's slick, it'll fix your mix. The simple but effective way it extends portions of the loop so as to allow you to slow down the tempo is nothing short of brilliant, and its ability to find the beats in a loop is maybe not perfect but surprisingly well developed. Need to quantize one audio segment to another? Bam, it's done. Best of all, you don't need an engineering degree to run the program. Tell it what sampler you're using, adjust one slider on the screen, and you're 90% of the way home.

The downside is undeniable: The program ought to support a lot more samplers, and its inability to handle stereo audio files will be a giant stumbling block for many users. Certain features could also use a little fine-tuning. The "silent slice" setup seems backwards to us, and we'd like to be able to slide the slice points around manually, as this would often be more convenient than inserting new ones. Even in its present form, though, ReCycle makes both audio and rhythm more malleable than ever before. And that ain't half bad. ■

DISCOVERIES

TITUS LEVI

IN ANY GIVEN MONTH, I GET TAPES from players who've switched from their main instruments to keyboards. John Balsbaugh, for instance, is a guitarist who recently discovered the Korg 01/WFD, while Fritz Martin is a bassist who picked up plenty of studio experience as a session player for Maloco Records, a gospel label based in Missisippi, as well as live credits with the Dallas-based jazz group Talk Of Rain.

Not that this month's Discoveries have abandoned their roots. Balsbaugh looks forward to getting a guitar synth to better take advantage of his synth's multitimbral possibilities. And Martin has integrated his bass playing into some of his keyboard projects. On his 1992 CD *Cardboard Nimbus* (available through Parallax Records), this approach lets him make full use of synth colors while preserving the hands-on feel of a live bass player. Sliding to and fro around the downbeat, the bass gives Fritz's rhythm a liquid feeling. Subtleties of articulation, such as glissandi and vibrato, enliven the music from the bottom up. He also spices up the structure by turning it upside down, with bass solos and melody lines; airy textures and jazzy licks on the keys add up to a pleasing, smart, and relaxed new age sound.

Balsbaugh, on the other hand, starts with driving rather than floating rhythms. "I get that from my rock background," he reports. "Drums really have an important role there, and that stayed with me. In fact, my first MIDI instrument was a Yamaha RX7." Sharp, ever-shifting drum patterns bring his tape *dream escape* (available directly from the artist) closer to rock, with some prog overtones. Details change throughout, sometimes quite suddenly, but generally the mood remains dark, brooding, and reflective. The style covers, and in some ways transcends, everything from fist-pumping rock and roll to dreamy new age lullabies.

For Balsbaugh, the move toward keyboards began when he enrolled in the Ohio-based MIDI Workshop program. "That," he says, "pushed me over the top. I had gotten into some clichés with the guitar, and the keyboards gave me a break."

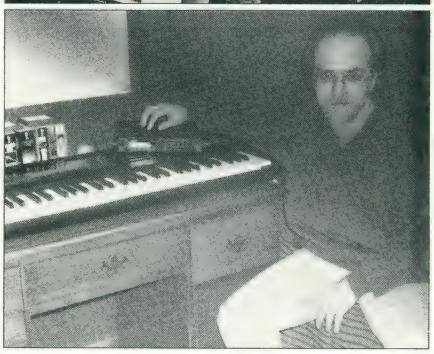
Martin's cure for clichés came in the form of study for a Ph.D. in composition at North Texas State University. "Knowing the theory enhances what is available to me musically and keeps me away from clichés. I use the theory as a tool."

Although academic music seems to lie a long way from gospel sessions, Dallas jazz clubs, and new age recordings, Martin insists that "it all comes together in my creativity. Everything I do in music is just an expression of myself, so all those elements meet there." ■

FRITZ MARTIN

Style: new age, contemporary classical. **Age:** 35. **Influences:** Josef Zawinul, Elliot Carter, Pat Metheny, composition teacher Larry Austin. **Main Instruments:** Roland D-50 & Super Jupiter, Casio SC-1, Oberheim Xpander. **Contact:** Parallax Records, Box 116387, Jackson, MS 39387. (601) 353-7505.

JOHN BALSBAUGH



Style: new age electronic, rock, film music. **Age:** 25. **Influences:** Kiss, Randy Rhoads, Yngwie Malmsteen, Van Halen, Michael Hedges, J. S. Bach. **Main Instrument:** Korg 01/WFD. **Contact:** 4580 Londonderry Rd., #B79, Harrisburg, PA 17190. (717) 671-0192.

HONORABLE MENTION

Name: Vasco Martins. **Style:** "south-bound music," new age. **Contact:** UPAV, Rua Luis Pastor de Macedo 26, Loja, 1700 Lisbon, Portugal. (011-351) 01-757-6160. Martins put together an excellent meeting of world music and synthesizers on one of his three 1992 releases, *Ritual Periferio*. This CD captures a range of moods, styles, colors, and rhythmic vitality in a sublime and beautiful sound he calls "south-bound music." If you like your electronic music flavored with true-to-the-roots global zest, *Ritual Periferio* is highly recommended.

Titus Levi, founder of the California Outside Music Association, spends his free time struggling through graduate economics courses at U.C. Irvine. If you'd like to appear in Discoveries, send a cassette of your best material (full name, age, style, influences, performance credits, future plans, and equipment), a publishable phone number and address at which readers may contact you, and a clear black-and-white photo of yourself with your keyboard setup. Photos should be labelled with your name and the photographer's name and address. All styles of music will be considered. Due to number of submissions, material cannot be returned, and applicants will not be contacted unless accepted. Send all correspondence to Titus Levi, 5135 Hanbury St., Long Beach, CA 90808. Titus also invites Discoveries alumni to keep in touch with news about career advances, and would like to hear from more artists who use non-keyboard triggering devices or interactive computer software.

REEL WORLD NOTEBOOK

JEFF RONA

THE WAVE OF THE PRESENT, PART 1
PROJECT: *THE CRITIC*

SO MANY PEOPLE I KNOW WITH MIDI studios are on a quest for the perfect sampled string section, the quintessential trumpet, or the ultimate flute. Although I am more interested in using samplers and synthesizers to create new and unique sounds, I have also put together a silicon orchestral simulation for certain projects, both my own and those of other composers I work with. But a recent project turned all of that around for me. I got the opportunity to compose and record my first score for a real, bona fide orchestra — a room full of women and men with expensive instruments and a bunch of black dots on paper in front of them. My job? Those black dots!

So what qualifies me, the synth and sample guy, to write for orchestra? Nothing! Well, almost nothing. As a music student, I played in some orchestras and classical ensembles (flute and piccolo), and studied composition, orchestration, and conducting. Some of those skills languished while I pursued my interests in higher technology. Now was a chance to dust them off, clean away the cobwebs, and do something in a more traditional setting. I turned my sequencer on.

Orchestrally, I had a specific palette to work from, based on the main theme music for *The Critic* — strings, woodwinds (featuring clarinet solos), French horns, trombones, and a standard rhythm section of piano, bass, and drums. After watching the video of the show, I added two trumpets and an accordion to the roster, since parts of the show had some Cuban and Hispanic elements. I loaded all these sounds into my samplers, along with some added Latin percussion. I decided that, given the short time I'd have to record the orchestra, I would do the percussion and electric bass myself. (Besides, those parts are really fun to do!) Now I had the sonic template for the whole show all ready at the touch of a key. I also set up a track template in my sequencer, so that each cue was laid out the same, named by instrument, whether I used every instrument in the cue or not.

Next I enlisted the services of a top-notch orchestrator to assist me in the transition from sequencer to score paper. Because of the severe time restrictions involved, most composers working in film and television today use an orchestrator. The orchestrator also brings special expertise to the project. While some people may look down on this, I see it as just another collaboration — the orchestrator fulfills the vision of the composer and when possible will embellish it, just as a good musicians in a rhythm section might.

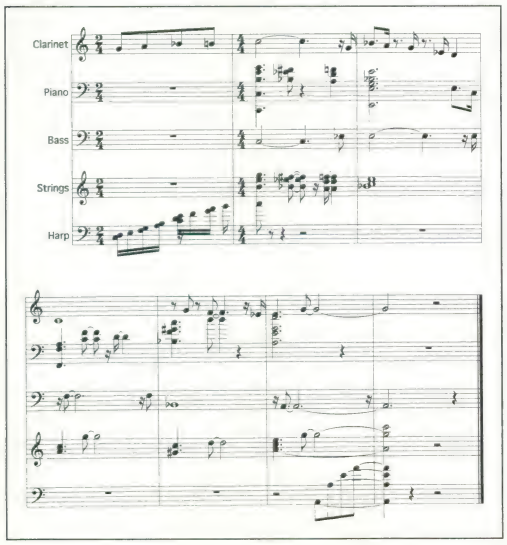
I'd known Bruce Fowler (trombone player with Zappa and Beefheart in his former life) for many years, but we had never had the opportunity to work together. Now was the time. While Opcode Vision 2.0, the sequencer I use, can print out score and parts, there is a great deal of essential detail that is needed in an orchestral score that gets left out, such as dynamics and articulation markings. Bruce could also give me much-needed suggestions about string or wind voicings, and ensure a good sound from the group. As I was sequencing (or "composing," as it used to be called), I always kept in mind that the end result would be quite different once the real orchestra played the parts.

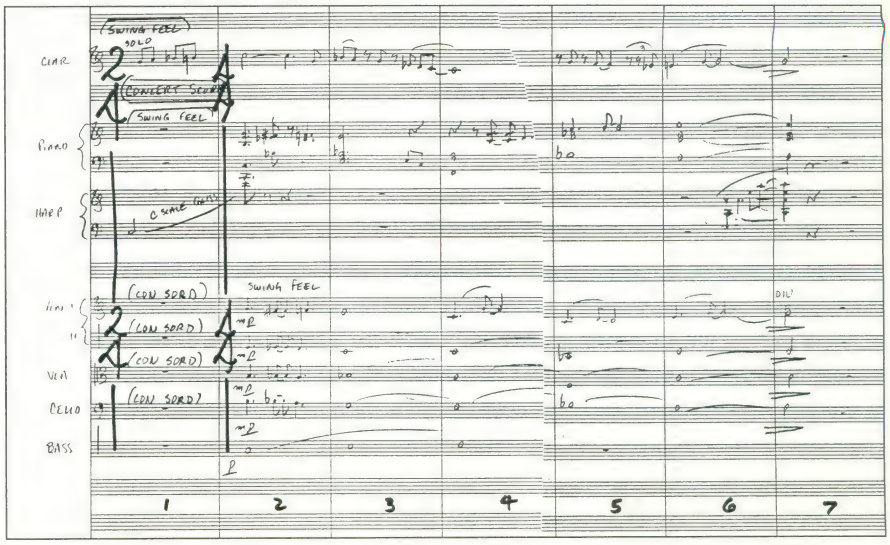
I got the videotape late on a Sunday night, and the recording session was already scheduled for the following Thursday morning. In that time I had to write all the music, get it approved, hand it over to Bruce so he'd have enough time to do the orchestrations and send them off to get copied, record my timecode, clicks, and synth percussion parts to 24-track tape (along with a scratch of the demos), and then show up at the orchestra session at 8 A.M. on Thursday. Time to push some buttons.

The first big surprise came on Monday, when I spoke to the show's producer for the first time. I asked when someone would be by to listen to the cues and approve them. He said, "Oh, we'll just all come to the recording session. See you Thursday!" Yikes. I've never done a recording where the music wasn't completely approved before the final recording. That's what synths are for. (Well, not really, but they are sure handy for that sort of thing.)

Writing the music was a blast. I used bits of the theme and integrated it into several cues. One of the recurring bits in *The Critic* are the vicious little parodies of popular films, and this episode was filled with them. A "trailer" in the style of Spike Lee's *Malcom X* for the movie *Malcom F* (about Malcom Forbes), a cross between *Terminator 2* and the classic French film *The Red Balloon* (called *The Red Balloon 2 — The Balloon's Revenge*) starring Steven Seagal, a Mel Gibson action movie, and so on. These had to be real parodies musically as well,

Ex. 1. The sequencer's rough printed output for one short cue. *Ex. 2. The cue from Example 1, as orchestrated by Bruce Fowler.*





which means they had to be played very seriously and just a little over the top. Since I had only a smallish orchestra (20 strings, 6 brass, 5 winds) to record what needed to be a huge score, I wanted to embellish those cues with a dollop of pre-recorded synths.

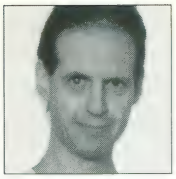
On Tuesday, I had Bruce Fowler over to give him the first half of the music. We went through each cue: I played him my synth demo, told him what I was going after (tender, scary, triumphant, etc.) and we discussed some orchestral options. For the most part, my demos were exactly as I wanted them played by the orchestra, which made his job pretty easy. I gave him a cassette with my demos. Each cue was slated with the cue number and title. I recorded the click along with the music, so Bruce could discern the exact rhythms on sections that might be loosely performed or where the tempo makes sudden changes.

I took advantage of the sequencer's notation capabilities and gave Bruce a printout of each cue. Anyone who's used a sequencer with transcription capabilities knows that they all require some amount of "tweekage" to get them to look like standard music. Since I was not quantizing most of the parts, the transcriptions were pretty rough, but they did what was needed — they gave Bruce an approximation of the score, and accurately showed all the pitches in the music. The example on page 135 is a short cue, both the computer printout (Example 1) and what Bruce did for the orchestra (Example 2). The combination of rough score and decent demo tape, along with our brief chats, gave Bruce everything he needed. Off he went and left me to write the rest of the music.

On Wednesday I finished the writing. Bruce came and picked up the last of the music. Now I had to prep tapes for the session the next day. I checked with an engineer at the scoring studio and got the specs on how to record my part of the score (tape brand, speed, where to put code and clicks, etc.). I rented a standard reel-to-reel 24-track machine and had it delivered to my house. It wouldn't fit into my studio, so it remained in the kitchen, and I fed lines to it from my studio. I recorded tones for alignment, SMPTE timecode for lock-up to picture, clicks for the musicians, scratch mixes of all the music, bass, drums, and percussion, and some separate sampled strings for the bigger cues. We finished tracking everything at about 2 A.M. on Wednesday night. I had to be at the studio at 8 A.M. the next morning. I got a little sleep and then headed over to the studio, which was only about 15 minutes from my house.

So how did the session go? Tune in next month for the exciting details. Until then, remember: Ain't nuthin' like the real thing, baby!

Jeff Rona is a composer, synthesist, writer, and educator in Los Angeles. He was chairman of the MMA for five years, and is currently coordinator of the UCLA Extension electronic music program.



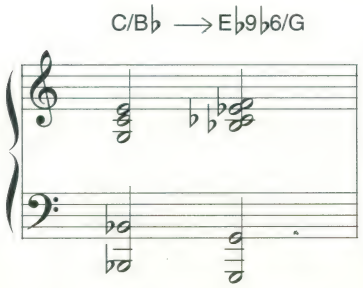
INSIDE THE MUSIC

DAVE STEWART

CHORD VOICING & COMPOSITION 1

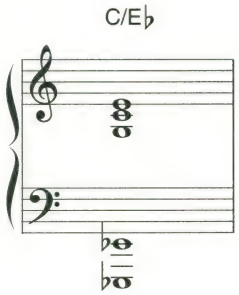
LAST MONTH I PROMISED A MORE detailed investigation of the contents of the old Bill Bruford tune "Beelzebub," but rather than deconstruct each individual voicing, I'd prefer to look at some of the general techniques of composing with chords, and point out how they are applied in this venerable satanic favourite. The first technique is the *altered bass note*. As you know, chords may be played over a variety of bass notes, and the resulting voicings are codified as "x over y bass" — for example, *C* over *E* bass, *F*♯ over *B* bass, *E*♭*m7* over *A*♭ bass, etc. A very simple form of this is shown in Example 1, where our hardworking friend the *C* major chord is hammered out over a descending bass line, giving rise to a series of altered bass note voicings. The third chord, though technically and contextually a "*C* over *A* bass" voicing, contains all the elements of an *A* minor 7 chord, and sounds so thoroughly minor that *Am7* is the only appropriate name. The last chord, *C* over *F* bass, is a very strong-sounding voicing whose tonal ambiguity can be very useful for composition. We can complete the scale of descending bass notes by the movement shown in Example 2. Classically trained musicians will be used to seeing the *C* over *E* bass chord described as "*C* 1st inversion," but I prefer the simpler modern name. The *C* over *D* chord may seem, in this context, a little sonically pointless, but it can be a useful pivot point for chordal movements such as the one shown in Example 3.

There are five more permutations of "altered bass note" chords in the key of *C* major, all with black-note roots, and these you can see in Example 4. The first chord, *C* over *B*♭ bass, is a somewhat tense-sounding affair with a strong classical pedigree, which can often be heard in movements such as those in Example 5. These movements, known as "resolutions," have a strong musical logic, but are so predictable that my own resolution is to avoid using them. . . . However, to keep everyone guessing I might occasionally "resolve" a *C* over *B*♭ bass chord thusly:



I suppose this is the harmonic equivalent of answering a question with a question!

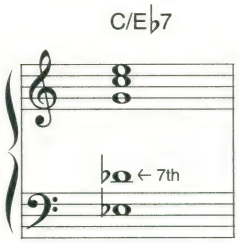
What about the remaining four "*C* over black note" chords? Are they an interesting challenge to our received diatonic notions, or merely a useless, ugly noise? (Answers on a postcard, please, to Dave Stewart's Institute of Harmonic Research, Antarctica.) The jazz rock guys of yesteryear clearly plumped for the former view, as their tunes were full to bursting with such voicings. You know the kind of music I mean? It sounded like what you see in Example 6, and was usually played on Fender Rhodes over a backdrop of skittering, hi-hat-heavy drums under a barrage of tortured, piercing lead guitar playing in the highest register possible. Not my favourite compositional style, but at least the '70s fusioneers were prepared to push the harmonic boat out a little. UK, a British (natch) group of this period led by keyboardist Eddie Jobson, actually opened one of their compositions with a fortissimo rendition of this chord:



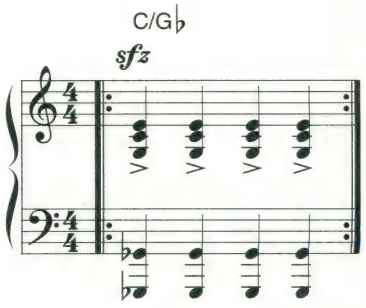
This always struck me as a weird choice for a band so intent on producing "commercial" music. Still, I enjoyed it, and if you open your ears a little, all these voicings are musically feasible. If some of them strike you as stark and brutal, consider Example 7, where the tension of each "*C* over black note" shape is released by a movement to a more sweet-sounding chord. In Examples 7b and c, the *C* over *G*♭ and *C* over *D*♭ voicings are softened by adding a *B*♭ (a seventh) to the *C* major chord, which bridges the gap and provides a point of contact between the right-hand chord and its left-hand bass note.

Dave Stewart and Barbara Gaskin are Rykodisc recording artists. Mail your queries/eulogies/death threats to Dave and Barb c/o Broken Records, 18 Yeomen Way, Hainault, Ilford, Essex IG6 2RN, England.

Even Eddie Jobson's shocking opener can be softened in this way:



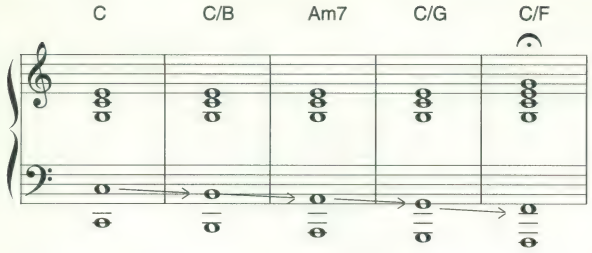
Adding a 7th (*D*♭) to the *E*♭ root of a "*C* over *E*♭" chord transforms the once savage shape into a tame, almost cabaret-style voicing. However, Trent Reznor-type players (if they use chords at all) will prefer to keep angst at a maximum by pounding out undiluted versions like this:



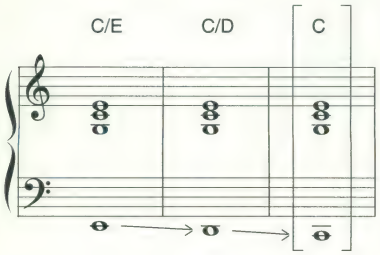
Good luck to them (and hard luck to their neighbours).

Our heads spinning with all this insider knowledge and conflicting opinion, we can now re-examine three bars of "Beelzebub" (Example 8) and notice immediately that chords with altered bass notes abound. For the most part, the right-hand chords are simple major triads, though the first chord substitutes a 9th (*G*) for a major third (*A*), and chords 5 and 6 add a "sus 4" to the triad. If anyone out there prefers to call chord 6 "*Cm7*♭*6*," they will get no argument from me, for the same reasons given in paragraph one with respect to the *Am7* chord. . . . Keen-eyed music students will also spot examples of strong voice leading and contrary motion in this extract. If you want to know that those intriguing terms mean, tune in to next month's instalment, thrillingly named "Chord Voicing & Composition 2" — just when you thought it was safe to start playing *C*, *F*, and *G* again.

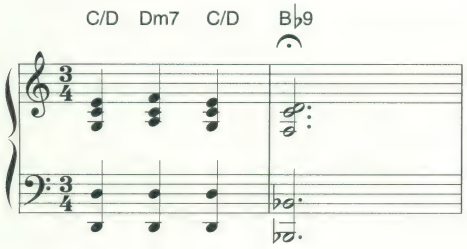
Ex. 1. A C chord over a descending bass line.



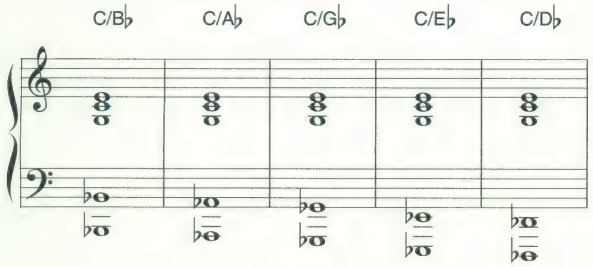
Ex. 2. A continuation of Example 1 to complete the bass scale.



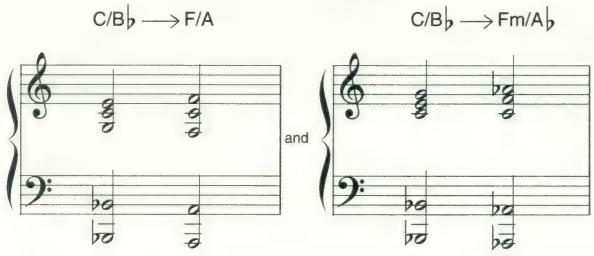
Ex. 3. A chordal movement that uses the C over D bass chord as a pivot point.



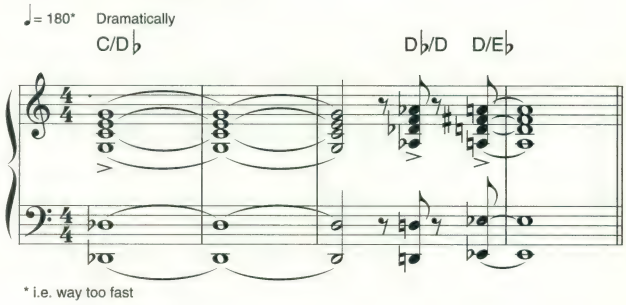
Ex. 4. The five remaining permutations of C over "x" bass chords.



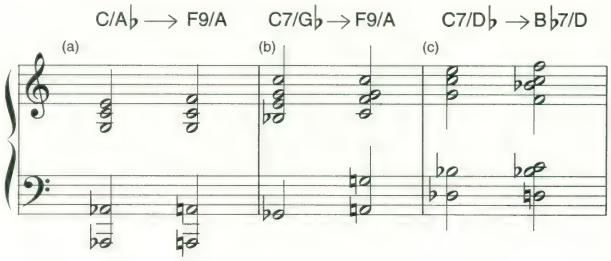
Ex. 5. Possible movements based on the C over B♭ bass chord.



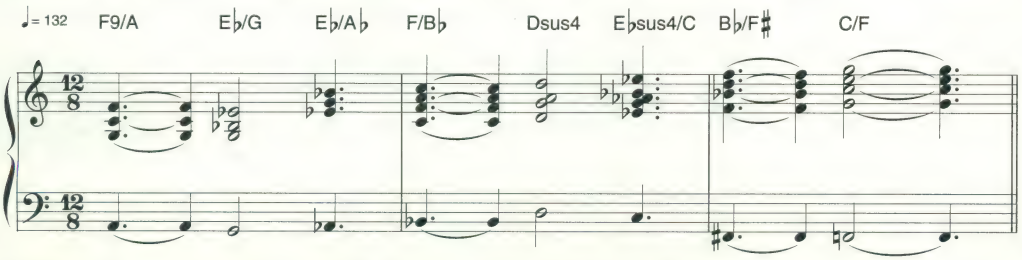
Ex. 6. The sound of the '70s.



Ex. 7. Chordal movements release the tension.



Ex. 8. Three more bars of the madness known as "Beelzebub," which was originally recorded on the album Feels Good to Me *(1978), but also appears in a wilder, trouser-shredding form on the live album* The Bruford Tapes *(1979). See last month's column for more.*



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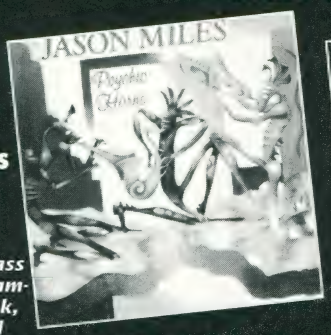

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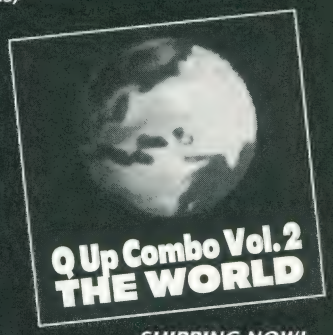

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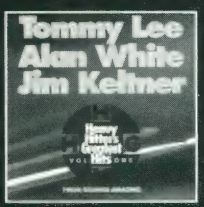

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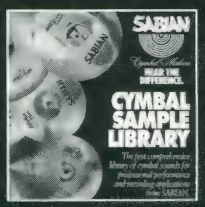

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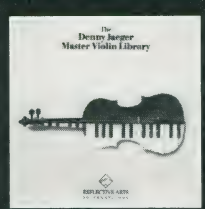

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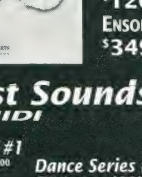

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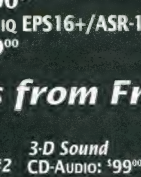

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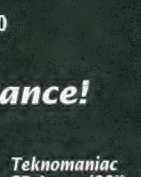

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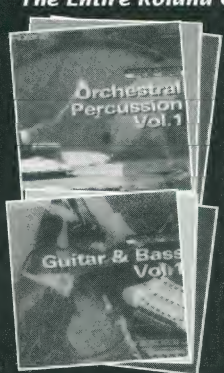

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SPEC SHEET

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SOFTWARE

***DECK DEVELOPMENTS* (MACINTOSH).** OSC has announced **version 2.1** ($399) of their **Deck II** hard disk recording software. Deck II runs on any Macintosh 660AV or 840AV computer with no audio card required, and will work with any Macintosh containing a Digidesign Audiomedia, Audiomedia II, Audiomedia LC, Sound Tools II, or Pro Tools, RasterOps MediaTime, or Spectral Innovations NuMedia card. The new version offers eight tracks on a Macintosh 840AV or Pro Tools (six tracks on a 640AV), a "super big" display mode, importing and playback of Standard MIDI Files and tempo maps with OMS support, the ability to output MIDI Time Code, and real-time pull-up and pull-down sample rates for film/video transfer.

OSC's **8-Track Tool for Deck II** ($129) allows Digidesign Pro Tools owners to play back eight simultaneous tracks of digital audio on a single Pro Tools system. Users can copy the tool into the same folder as Deck II. Once installed, it runs automatically, placing eight faders in Deck II's mixing window. OSC, 480 Potrero, San Francisco, CA 94110. (415) 252-0460. Fax (415) 252-0560.

ANOTHER SCORE (IBM-PC). Dr. T's latest sequencing software is **QuickScore Professional** ($69.95; upgrade: $49.95), an upgrade of their QuickScore Deluxe multitrack notation program for Windows. It features a 16-track/stave display, real-time scrolling during playback and recording, piano-roll-style graphic note and controller editing, a track sheet, and a MIDI mixing window for volume and all MIDI controllers. Other enhancements include entry of two voices per staff, cut-and-paste editing of large chunks of music across all tracks, support for various clefs and musical symbols, and text and lyric entry. QuickScore Professional supports the standard MIDI interface cards and popular soundcards. Dr. T's Music Software, 124 Crescent Rd., Needham, MA 02194. (617) 455-1454. Fax (617) 455-1460.

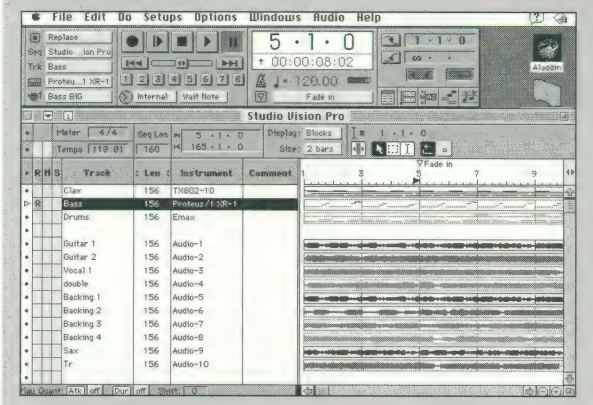
SEQUEL SEQUENCER (AMIGA). Diemer Development has upgraded their **Sequel** sequencer to **Version 1.2** ($139.95; free to registered users). In addition to 32 tracks per pattern, unlimited pattern chaining, track mute and solo, animated playback meters, and an auto-scrolling notation list, users can now transpose note playback up and down by semitones on the fly. Drum tracks can be excluded from transposition, and songs that are chained together from separate files can be unchained into one long file, allowing overdubbing. The song can then be dropped into a larger chain, and so on. Unchained songs can be saved as format 0 or 1 Standard MIDI Files for export to other programs and platforms. Sequel 1.2 also allows more user preferences to be saved to disk. Diemer Development, 12814 Landale St., Studio City, CA 91604-1351. (818) 762-0804.

HARDWARE

POWERED MONITOR. Audix's **PowerHouse PH25** ($589/pair) is a studio monitor with a built-in stereo amplifier. The 60-watt/channel discrete stereo amplifier has complementary symmetry, matched resistor arrays, low heat dissipation, and a reportedly low distortion rate of 0.01 THD. The speaker system is a D'appelido 2-way design consisting of dual proprietary 5-1/4" long excursion woofers and a precision 3/4" polycarbonate dome ferrofluid tweeter. A 1/2" wood composite cabinet offers acoustic fiberglass interlining, component matched crossovers, and gold terminal connectors. The PH25 is available in a magnetically shielded version. Audix, 19439 S.W. 90th Ct., Tualatin, OR 97062. (503) 692-4426. Fax (503) 692-4658.

MORE POWER. Not to be confused with the Audix PowerHouse, Generalmusic's **Powercase 12** ($1,395) powered mixer features four mono and four stereo input channels with 150-watt stereo power output. The **Powercase 16** ($1,795) offers eight mono and four stereo input channels with 250-watt stereo amplifiers. The compact powered mixers feature balanced XLR and 1/4" input connectors, an individually switchable phantom power supply for each channel, a 7-band graphic equalizer, and a carrying case with a protective sliding metal cover. Each mixer is equipped with a stereo digital signal processor with two separate sections, one that produces reverb (hall, room, vocal, plate, and early reflections) and another that generates echo, delay, chorus, flanger, and phaser effects. The two sections of DSP are independent and each receives signals from two separate mixer outputs. Effects are programmed via a two-line by 16-character LCD and three controls. A MIDI-in connector

SPEC SPOTLIGHT



IMPROVED VISION. The first of Opcode's latest Vision products is an upgrade to their sequencing and digital audio recording software for the Macintosh. **Studio Vision Pro** ($995) adds 16-channel compatibility with Digidesign Pro Tools to the existing Vision 2.0 features, such as track overview, notation, and groove quantize. In Track Overview, you can see and edit your music in blocks mode or phrases mode. Notation is available for editing and printing MIDI-sequenced parts. The OMS-compatible software allows extensive non-destructive editing of the digital audio, includes SMPTE synchronization and full automated mixing of digital audio tracks, and supports DAE (Digidesign Audio Engine). You can view and edit up to 16 channels of digital audio in each editing window, alone or with MIDI information.

Those interested in musical applications for multimedia and project studios should check out **Studio Vision AV** ($595), which offers the ability to use Apple's Sound Manager to record and play back digital audio along with MIDI. It can record and play back 16-bit audio on a Macintosh Quadra 840AV or 660AV without additional hardware cards. In addition to fully automated mixing of digital audio tracks (including pan and volume control), Studio Vision AV incorporates extensive nondestructive editing of digital audio. Opcode Systems, 3950 Fabian Way, Palo Alto, CA 94303. (415) 856-3333. Fax (415) 856-3332.

allows external real-time control of the effects. Generalmusic, 1164 Tower Ln., Bensenville, IL 60106. (708) 766-8230. Fax (708) 766-8281.

ROTATING SPEAKER SIMULATOR. Voce's **Spin** ($449) is a single-space half-rack module that duplicates the effect of a rotating speaker cabinet miked with up to four microphones (two upper and two lower). The sound processor has three delays per rotor, front-panel-controlled overdrive, a low-level guitar input, MIDI in and out, stereo audio inputs and outputs, and 15 presets. Footswitch inputs are provided for brake and fast/slow rotor control. You can also use aftertouch to toggle the rotors' speeds. MIDI continuous controllers can be used to tweak rotor speeds and accelerations. Voce, 111 Tenth St., Wood-Ridge, NJ 07075. (201) 939-0052. Fax (201) 939-6914.

GLYPH GOODIES. Glyph's intelligent SCSI switch/extender for all SCSI-1 and SCSI-2 applications is available in rack-mount (**GSS-210R**, $595) or desktop (**GSS-210S**, $495) cases. The device allows any two SCSI initiators to share from one to seven SCSI devices in a daisy chain. It has two inputs and one output, and is controlled by a small rocker switch on the front panel. The GS-210 also doubles the usable SCSI cable length from initiator to SCSI device. SCSI-1 users can utilize cable runs of approximately 20 feet, and SCSI-2 users can run up to approximately 40 feet of cable.

Glyph has added 88/44Mb, 200Mb, and 270Mb removable hard drives utilizing SyQuest mechanisms to their SCSI storage line. A 1.3Gb 5.25" magneto-optical drive capable of real-time 44.1kHz, 16-bit digital audio recording and a 2.0Gb SCSI DAT backup drive are also available. All drives are available in rack-mount or standard desktop enclosures and ship with cables, manuals, and software and drivers for use with a Macintosh or samplers. Glyph also offers optional PC-compatible interfaces. Glyph Technologies, 605 West State St., Unit 1, Ithaca, NY 14850. (607) 275-0345. Fax (607) 275-9464.

SOUNDCARDS

ANOTHER CREATIVE CARD. Creative Lab's **Sound Blaster AWE32** audio card ($399.95) combines the Sound Blaster 16 Advanced Signal Processing card with the Advanced WavEffects digital sample playback synthesis of E-mu's EMU8000 chip. The card offers 16-bit stereo sampling and playback at up to 44.1kHz, supports the Sound Blaster platform, and is fully compatible with General MIDI, Roland Sound Canvas, and Roland MT-32 specifications. It supports multitimbral MIDI operation with 32-voice polyphony, as well as allowing independent control of effects (reverb, chorus, and QSound), vibrato, and tremolo for each of its 32 voices. Other audio features include resonant filters, a six-part amplitude envelope, and a six-part auxiliary envelope for independent control of pitch and timbre. Sound Blaster AWE32 is compatible with double-speed CD-ROM drives from Sony, Mitsumi, and Creative, and supports E-mu's SoundFont audio library of sampled sounds. Bundled with Sound Blaster AWE32 are VoiceAssist (speech recognition software for Windows), TextAssist (text-to-speech system), WaveStudio (wave-file editor), and Ensemble (for playback of wave, CD, and MIDI files). Other programs included in the package are QSound's Virtual Audio (a 180° sound-localization technology), HSC's Interactive SE, Twelve Tone's Cakewalk Apprentice sequencer, and a variety of other utilities. Creative Labs, Inc., 1901 McCarthy Blvd., Milpitas, CA 95035. (408) 428-6600. Fax (408) 428-6699.

SOUNDCANVAS SOUNDCARD. Roland has hitched a ride on the soundcard bandwagon with **SoundCanvas DB** ($229), a snap-on card that upgrades FM-type soundcards. It contains a dedicated microprocessor that manipulates over 200 voice parameters per note in real time and provides digital signal processing and access to 128 synthesized sounds. The card includes ready-to-use software, 100 Standard MIDI Files, built-in reverb with eight selectable reverb types, and a separate digital chorus effect. Two software programs are included with the card: DoReMix (a click selects music icons which can be assembled to create original compositions) and Easy Juke (a juke-box-style MIDI player that plays up to eight Standard MIDI Files randomly or continuously). Requirements include Sound Blaster 16, Sound Galaxy Pro 16, or any soundcard with a compatible expansion connector. Roland, 7200 Dominion Circle, Los Angeles, CA 90040-3696. (213) 685-5142. Fax (213) 722-0911.

SOUNDBOARD PACKAGE. Antex is bundling their **Z1** soundboard and **Z.Wav** 32-voice 16-part polyphonic wavetable synthesizer/sound module daughterboard into the **Z.SoundSystem** ($560), a package that also includes the Antex Series 3, Voyetra Multimedia Sound Software, and a Windows 3.1 compatible software driver. According to Antex, Z1 is the first DSP-based audio board with multiple industry-standard compression formats. Z.Wav is a General MIDI-compatible sound module configured in a plug-in daughterboard design that features 4Mb of sounds in ROM (128 digital instrument samples and 47 drum and percussion sounds). The Z1 can be purchased separately for $395 and the Z.Wav for $295. Antex Electronics, 16100 S. Figueroa St., Gardena, CA 90248. (310) 532-3092. Fax (310) 532-8509.

SOUNDS

BREATH-CONTROLLED BANK. Patchman's

WT11 Volume 1 ($39.95) is a soundbank of 32 breath-controlled performances and 32 breath-controlled voices for the Yamaha WT11. Because it was designed for horn players, you'll find ensemble and solo timbres, acoustic emulations, breathy wind instruments, and synth leads instead of pianos, organs, and drums. Formats available are data cassette, Opcode bulk dump, and Standard MIDI File. Patchman Music, 2043 Mars Ave., Lakewood, OH 44107. (216) 221-8887.

PRO-REC COLLECTIONS. The **Ultimate CD** ($299) is a CD-ROM for the Akai S1000, Ensoniq ASR-10/EPS-16 Plus, Digidesign SampleCell (Macintosh and IBM-PC), Kurzweil K2000, and Roland samplers that contains Pro-Rec's entire current sample library and more than 1,000 multi-sampled instruments, including over 300 synths, 300 basses, and 10 drum kits.

Pro-Rec's **Analogue Collection** audio sample CD ($89) offers more than 650 samples from 24 classic analog synths, ranging from the Odyssey, Chroma Polaris, and Elka Synthex to the EML 101, Memorymoog, and Roland Juno-106. CD-ROM versions ($299) are available for SampleCell (Macintosh), the K2000, and the S1000. Pro-Rec, 106 W13th St., Ste. 13, New York, NY 10011. (212) 675-5606. Fax (212) 627-3148.

SYNTAUR SET. For Ensoniq TS-10 and TS-12 owners, Syntaur has released **TS Set 1** ($39.95). Among the 60 sounds are Hyper-Wave patches, bass sounds, and drum loops. Documentation outlining patch selects and controller routings is included with the disk. Syntaur Productions, 4241 W. Alabama #10, Houston, TX 77027. (713) 965-9041. Fax (713) 963-9206.

OSC CD-ROMS. Resonant Dog Meat, Alien Sinus Problem, and Tiny Robot Hairball: Sounds like a punk-rock concert bill, but actually these are just a few of the tracks featured on **A Poke in the Ear with a Sharp Stick, Volume III** ($199). The CD-ROM library offers over 1,700 sounds, effects, loops, and clip-tunes from five different sound designers.

When your ears have had enough pokin', check out **Textural Ambience** ($149). This CD-ROM contains long, evolving atmospheres, soundtracks, and beds with an overall dark and moody tone. Both libraries consist of AIFF files for use in any Macintosh-based digital audio system, such as OSC's Deck II or Digidesign's Pro Tools and SampleCell. OSC, 480 Potrero, San Francisco, CA 94110. (415) 252-0460. Fax (415) 252-0560.

DRUMTRAX LIBRARY. In DrumTrax's **Original Library/Performer Version** (price not available), all of the files are saved in the file format for use with Mark of the Unicorn's Performer sequencing software (Macintosh). The library contains over 4,800 measures of drum patterns in rock, latin, jazz, blues, dance, hip-hop, rap, ballad, R&B, and drum fills categories. A sample of the library is included with Performer 5.0 upgrades. DrumTrax, 51 Pleasant St., Ste. 218, Malden, MA 02148. (617) 387-7581. Fax (617) 387-1059.

BITS & PIECES

DIGITECH PEDAL. Add MIDI continuous control to your rack-mounted signal processors with the **MC²** MIDI Continuous Controller Pedal ($169.99). It is capable of transmitting volume, pan, expression, and other continuous controllers. The MC² has two knobs that provide a choice of 16 MIDI channels and the first 16 continuous controllers. It operates on battery or AC power. Digitech, 8760 S. Sandy Parkway, Sandy, UT 84070. (801) 566-8800. Fax (801) 262-4966.

EVS TUTORIALS. Help has arrived for Coda Finale 3.0 (Macintosh) and Twelve Tone Cakewalk Professional 2.0 for Windows users. Educational Video Solutions (EVS) offers video ($49.95) and audio cassette ($24.95) tutorials with Basics, Beyond Basics, and Power User levels. EVS, 2411 N.E. Loop 410, Ste. 132, San Antonio, TX 78217. (210) 656-2427. Fax (210) 656-8024.

LETTERS

Continued from page 115

Alternatives to Alternate

I am really pissed. In every other issue of your magazine I read about alternate controllers, alternate this or that, or some other thing. If your writers are deficient in the vocabulary department, I would think you would at least have an editor with a high school education. The word is *alternative*. "Alternate" means going back and forth *between* two alternatives, like alternating current — current that alternates between two directions of electron flow. "Alternative" means something that can be substituted for something else. An apple, for example, is an alternative to an orange, which is an alternative to a Twinkie. Look it up in the dictionary, you morons!

Nick Longo
Cesium Sound
Berkeley, CA

[*Interesting theory, Nick. According to our Webster's, one of the basic meanings listed for "alternate" is "alternative, substitute." If you've ever been summoned for jury duty, you might have ended up as an alternate juror. And if you took a scenic detour while on vacation, you might find yourself on an alternate route. Any other word usage questions you'd like help with?*]

Corrections

Thank you very much for the outstanding feature you did on me [July '94]. The intro was very flattering, and I especially appreciate the attention you gave to Red Dawn. There was only one small error. When I auditioned for Billy Joel, I played for his musical director Mark Rivera, not his tour director Max Loubierre. I would appreciate it — and so would Mark Rivera — if you could correct the error.

David Rosenthal
Somewhere Out There
With Billy Joel

Thanks very much for your item in Discoveries about my tape, *Perseids* [July '94]. I'd like to correct the phone number, which was misprinted. My contact phone is (818) 791-5695, and I can be reached via Internet at gukkle@pan.com. I welcome email from musicians, whether about my own music or the Creative Musicians Coalition, a great organization with which I am deeply involved.

Keith Snyder
Pasadena, CA

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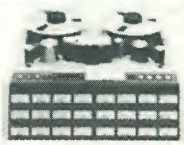

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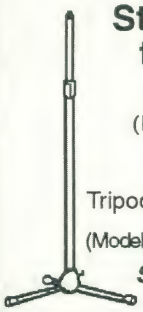

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Classifieds continue ➡

KEYBOARD

CLASSIFIEDS

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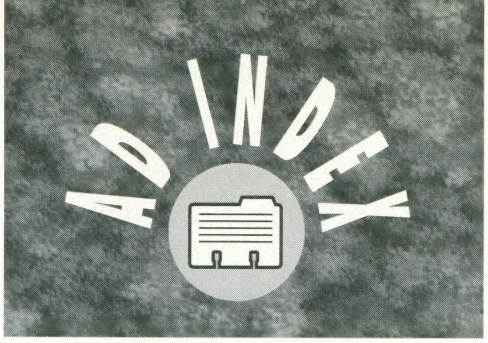

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When it comes to creating music, computers are great because they give you a band at your fingertips. But they can also bog you down with annoying technical distractions.

Work with players in an ensemble. FreeStyle remembers all your takes so you can easily choose your favorite parts.

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With its Riff Metronome™, FreeStyle lets you play to an inspiring drum riff instead of the usual boring click—instantly choose among dozens of riffs to find the one that gets you pumped.

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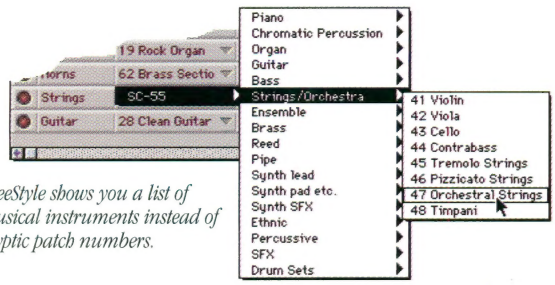
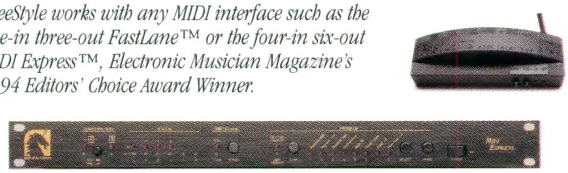


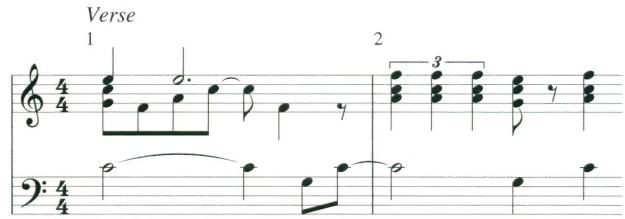
FreeStyle shows you a list of musical instruments instead of cryptic patch numbers.

With its trackless approach to sequencing, FreeStyle allows you to create an entire song without ever taking your hands off your keyboard or guitar controller. You may even forget your computer is in the room.

FreeStyle works with any MIDI interface such as the one-in three-out FastLane™ or the four-in six-out MIDI Express™, Electronic Musician Magazine's 1994 Editors' Choice Award Winner.



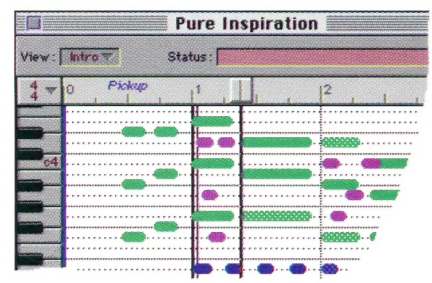
But if you do glance at your computer, you'll see full-color graphic editing and impeccable music notation. And when you're ready to put it all together, FreeStyle's arrangement window lets you easily assemble sections into a song.



Unlike those "EZ" programs, FreeStyle's notation looks great. It's automatic and intelligent with dynamic hand-splitting, multiple voices and engraver spacing.

Best of all, you're never locked into one way of working—you can switch freely between linear recording over your entire song and loop-recording within each individual section.

FreeStyle is also designed to keep MIDI complications out of your face, so it has built-in support for General MIDI sound modules and other popular devices. Just plug in your instrument, select the players you want, and start recording.



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